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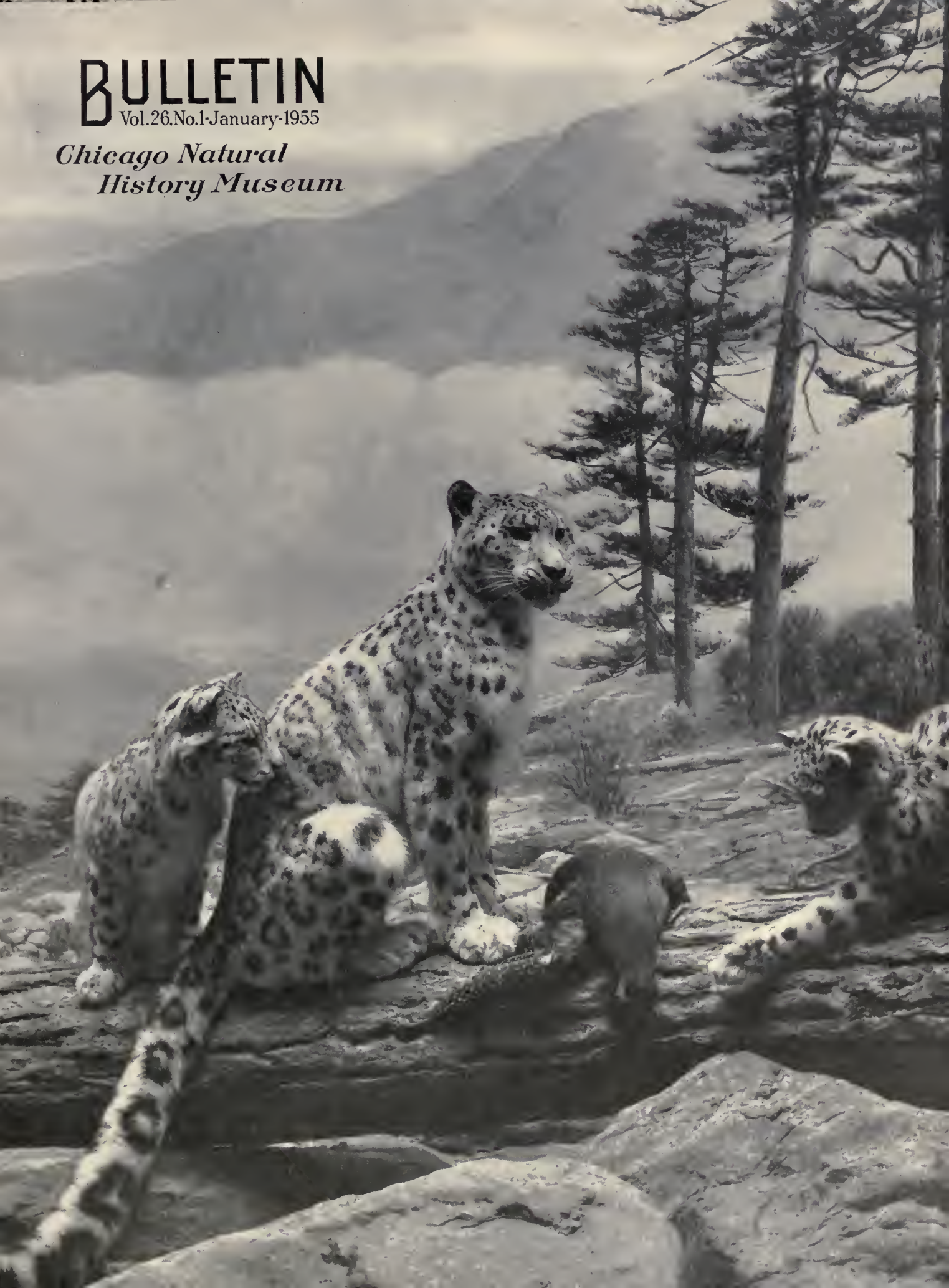
Chicago Natural History Museum



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Members are requested to inform the Museum promptly of changes of address.

'FILE-CABINET ZOO' AIDS RESEARCH

Laura Brodie, Assistant in Zoology, has discovered that there is no such thing as an animal picture that is useless. Someday, someone working on some problem will need just the picture that she was going to discard. Realizing this, it is clear that to accomplish her mammoth task of collecting and classifying animal pictures Miss Brodie has had to resign herself to the certainty of always being behind in her work.

Before Miss Brodie undertook the task of building up the photographic files, the different divisions of the Department of Zoology obtained pictures for reference as they were needed by the taxidermists or scientists. In addition, each individual often kept collections of his own. Now all pictures are kept in one place, classified according to one system, and are collected with an eye to future as well as present needs. The files have steadily grown to include zoological pictures from magazines and newspapers, from other museums, and from zoological societies and conservation departments. They are now a veritable "file-cabinet zoo" with pictures of hundreds of animals in varied poses carefully placed in their own classified pigeonholes.

Among those who make extensive use of the pictures in the files are the anatomists. D. Dwight Davis, Curator of Vertebrate Anatomy, used them recently in his study of the shoulder architecture of the bear. Curator Davis wanted to determine how a bear uses its legs when it climbs a tree. Because he did not have ready access to the habitat of free-roving bears (bears in zoos rarely get near anything faintly resembling a tree) he had to depend, in part at least, on what he could find out from pictures. There were several illustrations in the photographic files that helped him in completing his work on the Fieldiana publication, *The Shoulder Architecture of Bears and Other Carnivores.*

The photographic files have yielded valuable information to our own Museum artists and taxidermists as well as to sculptors and commercial artists who have come to the Museum on a photograph hunt. Many magazine illustrators are city-bred and, although they have a general idea of what a lion looks like when it runs, they find they need facts, not vague memories, when the taskmaster of paper and pen confronts them. Many of them have set up temporary camp in Miss Brodie's office and have made rough sketches on the basis of the pictures they have been able to find there.

During the course of a day requests for all kinds of pictures may come into Miss Brodie's office by mail or telephone. From the standard request of an encyclopedia or textbook for a certain animal picture there is the completely unorthodox request of an advertising-company artist who would like a picture of a dog with a sheepish expression or a horse slyly winking. Often there will be a letter asking for a picture of *the* rabbit —and Miss Brodie may have to write an answering letter explaining that in her files alone there are pictures of eight different kinds of rabbits. Which one does the person want?

Miss Brodie has also started work on a supplementary index of pictures that appear in publications available only in libraries and that, consequently, cannot be placed in her file. This is probably the only index of its kind in existence. The photography file itself is probably unique and, like many things in the Museum, its growth has been given impetus by the needs of people who are always in search of facts.

STAFF NOTES

Three new Field Associates have been appointed to the staff of the Department of Zoology. They are: **Dr. Robert L. Fleming,** who led the Museum's Himalaya Expedition in Nepal; **Dr. Frederick J. Medem,** of Bogotá, Colombia, and **Dr. Georg Haas,** of the Hebrew University, Jerusalem, Israel .... **Dr. Margery C. Carlson,** Associate Professor of Botany at Northwestern University, has been appointed Associate in the Museum's Department of Botany. She has conducted several joint expeditions to Central America for the Museum and the university ... **Dr. Karl P. Schmidt,** Chief Curator of Zoology, recently discussed "Zoogeographic Realms and Regions" before the zoology seminar at the University of Michigan and also conferred with herpetological colleagues on the faculty .... **Dr. Theodor Just,** Chief Curator of Botany, participated in a symposium on "The Role of Systematics in Modern Biology" held at Missouri Botanical Garden, St. Louis .... Two young women of the Museum staff—**Mrs. Alexander (Barbara) Polikoff,** Associate Public Relations Counsel, and **Mrs. William D. (Priscilla) Turnbull,** Assistant in Fossil Vertebrates—have resigned because of the demands of motherhood ... **Dr. Donald Collier,** Curator of South American Archaeology and Ethnology, and **George I. Quimby,** Curator of North American Archaeology and Ethnology, attended the annual meeting of the American Anthropological Association at Detroit in December. Mr. Quimby participated in a round table discussion on prehistoric culture change in the Great Lakes region.

THIS MONTH'S COVER

January being a month of snow and fur coats, we show on our cover a most suitable mammal, the snow leopard. Its fur is two to four inches long, as it lives at altitudes of from 7,000 to 13,000 feet in the high Himalayas. Anyone with a fur coat like that would certainly purr, but the snow leopard, in common with the lion, tiger, leopard, and jaguar, does not purr. This cat is a rare mammal, and its hide is seldom offered for sale. The habitat group in William V. Kelley Hall (Hall 17) of the Museum was prepared by C. J. Albrecht, former staff taxidermist, and the late Charles A. Corwin, former staff artist.

The world is a poor affair if it does not contain matter for investigation for the whole world in every age. Nature does not reveal all her secrets at once. We imagine we are initiated in her mysteries: we are as yet but hanging around her outer courts.

—*Seneca.*

The mode of life of the Indians who formerly inhabited the Chicago area is illustrated in exhibits in Mary D. Sturges Hall (Hall 5).

AMERICAN LOVE OF BALL GAME DATES BACK TO INDIANS

By JOHN RINALDO
ASSISTANT CURATOR OF ARCHAEOLOGY

RECENTLY INSTALLED in the Museum's Hall of Ancient and Modern Indians of the Southwestern United States (Hall 7) is an exhibit that illustrates several important phases in the life and customs of some prehistoric desert farmers of this region

CEREMONIAL DANCERS
As depicted on pottery design

as it existed in the period from about A.D. 700 to 1200. The mode of life shown in graphic form in this exhibit was one of the most highly developed in this area and included such involved techniques as canal irrigation of crops, the fabrication of mosaic plaques, the elaborate carving of stone bowls and paint palettes, and carving and etching (with acid) of shell ornaments and copper working.

What seems most remarkable about this development is that such a complex mode of living was evolved in the face of a harsh desert environment. The climate in southern Arizona, where these people lived, is very hot and dry and the sandy surface of the ground is sparsely covered with salt bush and occasional thickets of mesquite bush—plants that grow where scarcely any other vegetation can survive. Nevertheless these Indians, called Hohokam, managed to grow corn as their staple crop by means of a complex irrigation system extending for miles along the Gila River. Like their modern descendants, the Pima-Papago Indians, they also obtained food by gathering such wild products as mesquite beans and giant cactus fruit and, to a lesser extent, by hunting.

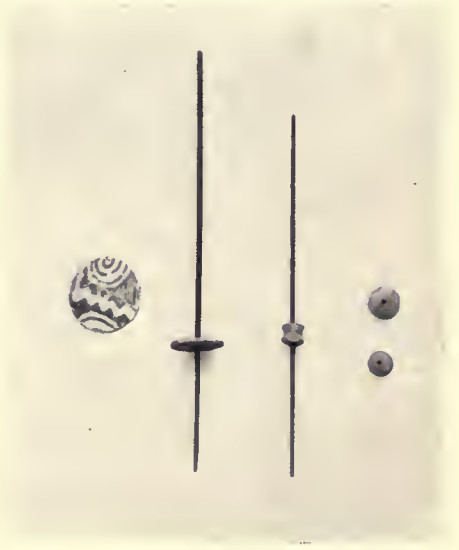
The Hohokam built large villages, consisting of clusters of single-room houses built in shallow excavations. These houses were rectangular or oblong in form. The walls and roofs were supported and framed with timbers and covered with smaller timbers and earth. There was a covered passageway near the middle of one side and a basin-shaped firepit inside near the entrance.

Hohokam pottery was made of clay mixed with finely ground granite and mica. The vessels were made in a number of shapes

POTTERY USED IN CREMATION RITES
The Hohokam Indians cremated their dead

and decorated on the exterior with a great variety of geometric and life-form designs painted in red on a buff background.

However, these people went further than the development of a high culture in the face of an unfavorable environment—they were also devotees of sport. They were among many peoples in this part of the continent and farther south into Mexico and Central and South America who played an unusual and spectacular ball game. This was played with a rubber ball and bears resemblances to tennis, soccer and basketball. The resemblance to court tennis is particularly amazing when the European origin of this game and the American origin of the Indian game are considered. For example, it was played on a court similar to a tennis court divided into halves by markers



SPINDLE WHORLS
Used in early weaving

and bounded by walls against which the ball was played.

Here our real evidence concerning the Hohokam game stops, although we may infer from these and other details that the

(*Continued on page 4, column 1*)

JANUARY 15 IS DEADLINE FOR NATURE PHOTOS

The Museum and the Nature Camera Club of Chicago, co-sponsors of the Tenth Chicago International Exhibition of Nature Photography to be held at the Museum from February 1 to 28, join in reminding all those entering prints or color slides that the final deadline is January 15. Entries received after that date cannot be considered by the judges.

No line is drawn between amateur and professional photographers in the competition. There are two separate divisions of entries—prints and color slides, with entries of four pictures permitted in each division by each contestant. In both of these divisions, entries, to be eligible, must fall into one of three classifications: (1) Animal Life, (2) Plant Life, and (3) General (this section includes scenery, geological formations, clouds, and other natural phenomena that do not fit into the two specific sections of biological subjects). Except for special prizes such as have been awarded by the Photographic Society of America in previous years, each classification has a full and equal group of awards of medals and ribbons.

The judges are: M. Kenneth Starr, Curator of Asiatic Archaeology and Ethnology at the Museum; Homer E. Holdren, of the Museum's Division of Photography; and three local camera experts: May Watts, Fred Richter, and Erik Sorensen. Accepted prints will be exhibited in Stanley Field Hall. Color slides will be projected on two Sunday afternoons, February 13 and 20, in the James Simpson Theatre of the Museum.

Official entry forms containing detailed information on the contest will be sent to applicants by the Museum on request. Photographs should be sent directly to the Museum.

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays by advance request.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 4 P.M.

INDIAN SPORTS—

(Continued from page 3)

remainder of the game was probably much like that of their southern contemporaries, the Aztecs and Mayas, whose game is pictured on the walls of their ball courts, in the early native codices (manuscripts), and written up in the chronicles of the Spanish explorers. The likeness to soccer is that in most versions of the game the ball could be struck only with the knees, buttocks, thighs or head but never with the hands. In fact in the Indian game, if the

HOHOKAM BALL-COURT
The scene of spectacular athletic games

ball was touched with the hands or with other than the specified parts of the body, it was counted as a fault and the opposing side gained a point. The similarity to basketball is found in one of the Maya versions where an object of the game was to drive the ball through a ring placed high in the wall of the court. Another object was to keep the ball in action while it was on either side of a dividing line and to try to drive it into the field of the opposing party, where, if the ball went dead, a point was scored.

OFTEN 'PLAYED ROUGH'

Among some groups a harder and heavier ball was used than among others, and in these games play frequently involved injury, in which case participation with the heavier ball was often considered a demonstration of manhood. The wagering of high stakes on the outcome was also frequently an element of the game, clothing, featherwork, emblems, and even slaves being wagered.

There is a great deal of evidence in the native codices, the early chronicles, and the decoration and orientation of the ball courts to indicate that the game had a ceremonial significance and symbolism. It has been suggested that the court itself symbolizes the sky and the ball the moon, the morning or evening star, or some other heavenly body. In other associations, it has been suggested that it was symbolic of warfare and quite possibly a substitute for war, in which case the players are the warriors for opposing communities.

The exhibit was planned by Miss Elaine Bluhm, Assistant in Archaeology, and Roger T. Grange, Assistant in Anthropology, and designed by Gustaf Dalstrom, Artist in the Department of Anthropology.

Audubon Screen-Tour Offered at Museum January 9

The Illinois Audubon Society will present its second screen-tour of the current season in the James Simpson Theatre of the Museum on Sunday afternoon, January 9, at 2:30 o'clock. The lecturer, Alfred G. Etter, a native Missourian and biologist, will show his film "A Missouri Story." The movie records the year-'round story of life on an old Missouri farm tilled just as it was 75 years ago and shows its plant and animal life, both wild and domestic. Admission is free to the general public. Members of the Illinois Audubon Society and Members of the Museum are entitled to two reserved seats on presentation of their membership cards before 2:25 P.M.

ANGOLA COLLECTIONS COMING TO MUSEUM

The Vernay–Transvaal Museum Expedition to Angola (Portuguese West Africa) has successfully concluded its work, reports its leader, Dr. C. Koch, well-known entomologist and Professional Officer of the Transvaal Museum. Through the courtesy of the expedition's sponsor, Arthur S. Vernay of New York, Chicago Natural History Museum will share in the collections, which number some 50,000 insects and several hundred reptiles, birds, and small mammals obtained in the course of more than 13,000 miles of exploration.

Several of the regions explored that had been considered terra incognita now are penetrated by an entomological survey for the first time, Dr. Koch states. Hazards of deserts, mountains, high sand dunes, and tall waterfalls had to be overcome. One of the most important zoogeographical results of the expedition was establishment of evidence that the Namib Desert is probably the most ancient desert on the African continent. In addition to zoological research, much data was obtained on botany, archaeology, and South African history.

Besides Dr. Koch, the personnel of the expedition included J. Balfour-Browne, entomologist of the British Museum, and the following members of the Transvaal Museum staff: J. T. Robinson, anthropologist; his assistant, K. C. Brain; and L. Vari. The expedition was assisted also by B. W. Zensinger of the South African Bureau of Standards, Dr. E. Scherz of Windhoek, and Dr. Zschokke, Chief Veterinary Officer of Grootfontein.

A spiral calendar covering three billion years helps visitors to Frederick J. V. Skiff Hall (Hall 37—Fossil Plants and Fossil Invertebrates) to establish the relative chronology of the various prehistoric creatures illustrated in the exhibits.

VENEZUELAN SCIENTISTS

The Museum was host in December to Brother Ginés and Dr. Luis M. Carbonell of Venezuela. Brother Ginés is director of the Sociedad de Ciencias Naturales of the College of La Salle in Caracas, Venezuela, This society publishes a scientific journal that appears three times during the year and, in addition, a series, known as "Novedades," that records species new to science. Under his leadership, expeditions are made to little-known or previously unexplored parts of Venezuela with students or alumni of the college who have received training in fields of natural science. Valuable contributions to the natural history, anthropology, and archaeology of Venezuela have resulted from such expeditions.

The purpose of Brother Ginés' visit was to arrange for exchange of specimens and publications between the Museum and the Society of Natural Sciences of La Salle and to get acquainted with members of the staff. During his visit Brother Ginés showed a motion picture of the society's recent expedition to the Perijá Mountains bordering Colombia and Venezuela in the land of the inhospitable Motilones Indians.

Dr. Carbonell, an alumnus of the College of La Salle, participated both as physician and collector of mollusca in the famous expedition sponsored by the Venezuelan government in 1951 to the headwaters of the Orinoco River in Venezuela. He was one of the party that finally reached the ultimate source of that river. During his visit at the Museum he showed colored slides taken on that trip.

Penny Stories for Children Raised to 2 Cents

Because of unavoidable increases in production costs, the Museum reluctantly has increased the price of its leaflet "Museum Stories" from 1 cent to 2 cents each for individual stories and from $1.75 to $2.75 for a complete set of the 183 available stories on subjects in anthropology, botany, geology, and zoology. Postage charges are extra. Even with the increase, the prices approximate only costs of production. "Museum Stories" are prepared by the guide-lecture staff of the Raymond Foundation after consultation with the scientific staff and are illustrated by Museum artists. The stories tie in with the subjects of the free movie-programs for children presented by the Raymond Foundation in the James Simpson Theatre during spring and autumn and are distributed free to children attending the programs.

The passenger pigeon, which flourished in America until comparatively recent years but is now extinct, is shown in a group exhibited in Stanley Field Hall.

INDIA'S MUSIC IS TIED TO BASIC CONCEPTS OF LIFE

The history of music in India goes back to the legendary period, and many of the instruments used at present are similar to those of ancient times. At least fifty different kinds of instruments are known, most of them occurring in slightly varied forms, and each having its local name in different parts of the country. Examples of the more important ones fill a large exhibition case (Case No. 1) in Hall L.

In India, music and its reason for being are interwoven with basic concepts of life and with religion and ceremony; there is music with connotations of sex, and music related to the seasons of the year and to prayers for rain to assure good crops. Thus, a musician from our world may be startled to learn that there are six "male tunes" in Indian music, and his confusion may increase when he hears of "female tunes" and "child tunes" and the "Muts" or laws which govern their classification.

'VINA' PLAYER OF INDIA

This mandolin-like instrument, played either with plectrums or fingernails, is one of the classical sources of Indian melody. Photograph from Day's "Music and Musical Instruments of South India."

Many tunes are supposed to be rendered only at a certain season and even a certain hour of the day, and any variation from such specified times is considered a violation of their beauty. There is a "Lord of the Rain" melody to be played in July and August when it is desired to precipitate a downpour. There is a special tune dedicated to the sunrise.

Stringed instruments, and instruments of percussion, are the most numerous and varied, although simple wind instruments have been known from ancient times. Reed instruments apparently came as a fairly recent development. While some of these instruments appear in much the same form throughout the country, most of them show many local varieties with limited distribution.

Most of India's musical instruments are used chiefly for playing solos, or for accompanying the voices of singers. There are a few modern court orchestras, but orchestral music is a recent development, and has led to the construction of new instruments or modifications of the older types.

DRUMS ARE FAVORED

Like the peoples of other parts of the Orient, as well as those of Africa and the islands of the South Pacific, natives of India seem to have a strong penchant for the music of drums in preference to the more melodic types of instruments. In the music of Europe and America the drums in almost all cases play merely a background role, while interest centers chiefly on the airs carried by the strings and the wind instruments. In Oriental, African, and South Sea Island music the other instruments are frequently subsidiary to the drums, This emphasis on the drums, together with the fact that different scales of musical intonation are used, is a causative factor in providing such a contrast between our music and that of Orientals. To our unaccustomed ears their most eminent virtuosi, playing their favorite melodies, usually sound like amateurs playing series of incoherent discords. It seems quite probable that, except to those of their people who have adopted western culture to some extent, our finest symphonies played by the greatest orchestras under the batons of Reiner or Stokowski would likewise probably sound discordant and irritating to the ear.

One of the instruments shown in the Museum is the *mridanga*, the most common and probably the most ancient of Indian drums. This is a concert drum cut out of wood, larger in the center than at the ends, which are of unequal size so that each can be tuned to a different pitch. Hands, finger tips and wrists are worked in a peculiar manner in playing this instrument, and its mastery is regarded as a great art requiring many years of practice. Another drum, the *dhol*, is played either by hand or sticks. It is used principally at weddings and other festive occasions. A third common drum, also favored for nuptial music, is the *tabla*, composed of two separate drums, one usually of metal and one of wood, which correspond in purpose to the two differently-tuned ends of the *mridanga*. Certain small varieties of drums are used widely by beggars to attract sympathetic passers-by.

SOME WINDLESS HORNS

A most striking curiosity is the *nysasaranga*, composed of a pair of trumpet-like brass horns, which are not played by the mouth, but are held one on each side of the throat against the larynx. Thus the vibrations of the player's vocal cords are transmitted into the instrument, inside of which is fastened a delicate membrane obtained from a spider's egg-case. This membrane in turn vibrates, and transmits the vibration to the column of air in the wide end of the horn, producing an oboe-like coloring of the singing voice. This instrument is also played in orchestras with the player emitting no sound whatever from his mouth.

The commonest stringed instrument of India is the *tamburi* which appears in numerous variations. It has four metal strings played with the fingers, and a sounding bowl carved from wood or made of a gourd. Played with a bow is the *sarangi*, Indian

(*Continued on page 8, column 1*)

A TYPICAL ORCHESTRA OF INDIA

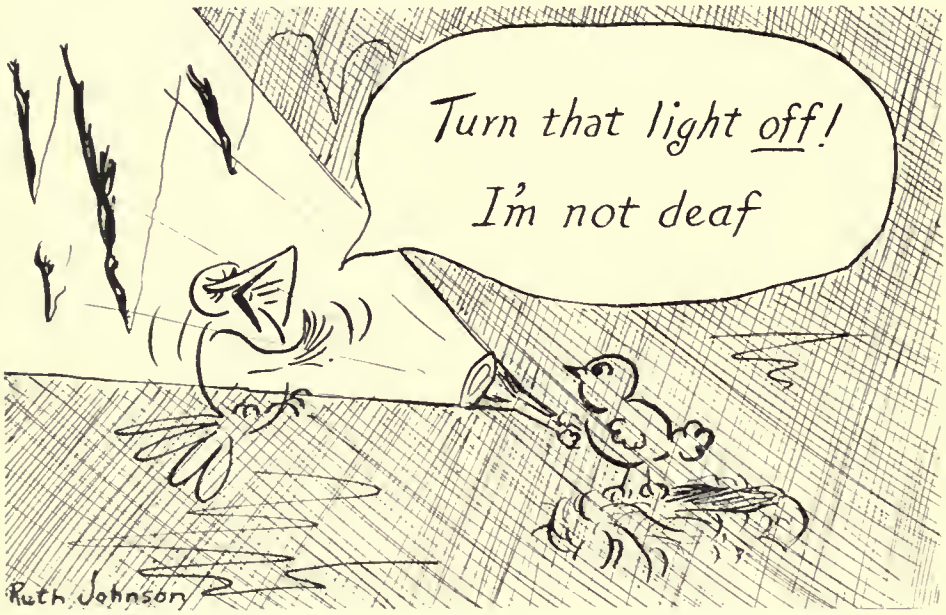
This particular aggregation of musicians was organized by Maharajah Sir S. M. Tagore

HOW CAVE BIRDS FIND THEIR WAY BY ECHOES

By AUSTIN L. RAND
CURATOR OF BIRDS

WHEN IN THE MOUNTAINS of southeast New Guinea with Archbold Expeditions I found a cave in which swifts were nesting. Far back in the cave they had glued their cup-shaped nests against the walls, laid their eggs there, and were raising their young. Though I turned out my light and waited to adapt my eyes to the darkness there was no trace of a lightening of the gloom. In what seemed to be complete darkness the swifts were coming and going. At that time I had no inkling of how they found their way.

A clew came with the discovery of the manner in which bats find their way in darkness. "Blind as a bat" is an old saying, but actually bats have quite normal eyes. Though their eyes are smaller proportionately than those of many other mammals, such as mice, they are not nearly as small as the degenerate eyes of moles and shrews, and they appear to be useful. However, bats fly in the complete darkness of caves and fly by night.



Experimentally it has been shown that bats avoid obstacles even when they are blinded. This fact was recognized at least one hundred fifty years ago, and a special sense was postulated to explain it. However, recent experiments at Harvard University have demonstrated that bats, deprived of sight, are able in flight to locate objects by echo-location. Bats utter high frequency, supersonic, cries with their vocal apparatus and hear the echoes with their ears. Thus they are able to perceive the location of the objects and fly accordingly.

Dr. Donald Griffin, who worked on this bat-orientation problem at Harvard, was able to apply the results to a similar problem in birds. In Venezuela there is a peculiar bird known as the oil bird, which resembles a nighthawk or nightjar. It spends the day in caves and nests there, far in, beyond where the light of day penetrates.

Dr. Griffin visited some of the caves and exposed photographic film in their recesses where the birds were flying. The film shows no perceptible darkening after nine minutes of exposure. As the birds flew about in the darkness they were noisy. In particular, when flying about in the caves they gave loud sharp clicks that were repeated rapidly and almost continuously. Dr. Griffin, using the recording equipment he employed in studying bat echo-location, found that these clicks had a frequency of about 6,000 to 10,000 cycles. This is well within the range of human ears, which have a range of about 20 to 20,000 cycles. There were no ultra-high frequency sounds.

Tentatively it was concluded that the oil birds were using these sounds in echo-locating objects to guide their flight in the Stygian darkness. It remained to test this experimentally. Several birds were captured and taken to a house where a room was fitted up for experiments. With light the birds flew about easily avoiding the walls. In darkness they performed equally well, the observers following their movements by the sounds the birds made—the noise of their wings and the clicking sounds.

Then the following experiment was made. The birds had their ears plugged with cotton sealed in with duco cement and were then released in the dark room. A pronounced difference was seen. The birds now flew into the walls. They could no longer avoid collision. These birds were then flown in the lighted room. They easily avoided the walls. The cotton plugs were then removed and the birds again flown in the darkened room. They flew as well as they had previously in the light and in their earlier untreated condition in the dark.

There seems no doubt that these birds use acoustic orientation—echo-location—to guide them in their flights in the darkness of the caves and in the experimentally darkened room. This is similar to the acoustic orientation of bats but differs in that the sounds used are within the range of human hearing.

Probably the swifts I saw in New Guinea used the same principle in finding their way to their nests in the dark recesses of caves. Perhaps the swifts use their voices for this, or perhaps they use the fluttering noise of their wings.

It is interesting that only recently has this principle been adopted for use in sounding ocean-depth, in charting harbors, and in locating floating derelicts and other hazards to navigation. Some bats and some birds have been using it for a long time, but only after we discovered it independently did we find that they had used it before us.

BOTANIST TO EXPLORE 'LOST WORLD' AGAIN

When Dr. Julian A. Steyermark, Curator of the Phanerogamic Herbarium, sailed for Venezuela late in December he was continuing an expedition that, in reality, began in April, 1953. At that time he started out to explore the summit of Chimantá-tepuí, the largest table mountain in the remote reaches of Venezuela's "lost world." So arduous and treacherous was the task of breaking trail to the summit of this mountain that by the time the summit was gained few days were left in which to explore the area. But even quick exploration revealed unusual plants (some of which are new genera), four species of snails new to science, a rare frog (only two of which had been found previously), and bats (on which a paper has already been published by Colin C. Sanborn, Curator of Mammals). Curator Steyermark determined to return in 1954 to continue his explorations.

The present expedition is a joint enterprise of New York Botanical Garden and Chicago Natural History Museum. Dr. John Wurdack of the Botanical Garden, a veteran of several trips to the "lost world," is co-leader of the expedition with Dr. Steyermark. Transportation to Venezuela is being provided by Gulf Oil Company.

Wurdack and Steyermark plan to use the trail Steyermark cut last year. Consequently their ascent of the mountain will be accomplished much more quickly than was possible in 1953. Full time, from the day they reach the summit until April, will be spent in culling the hitherto unknown botanical and zoological riches of Chimantá-tepuí.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

STRAY FEATHERS FROM A BIRD MAN'S DESK. By Austin L. Rand. 224 pages. Illustrated. Doubleday and Company, Inc., Garden City, New York, 1955. $3.75.

A bewildering number and variety of bird books have deluged the public in recent years. Even the professional ornithologist has some difficulty in keeping track of the book titles alone, and one might be pardoned if he assumes that birds as a subject have been treated more than fully—that little of interest or novelty concerning them remains to be said.

The fallacy of such a cynical viewpoint is now ably demonstrated by Dr. Austin L. Rand, the Museum's Curator of Birds. In this volume the author explores the world of birds and their curious and interesting habits with sympathetic understanding based on years of observation and study. Under his skillful guidance the reader meets old bird-friends in unsuspected roles and from time to time is introduced to oddities of bird life that seem incredible. By using a style that is commendably informal and by interspersing his text with amusing anecdotes, Curator Rand succeeds in making even the commonplace entertaining, while his accounts of the unusual are exciting adventures in bird study that will appeal to the general reader and advanced bird-student alike. Members of the Museum and others who have enjoyed bird articles by Rand in the Museum BULLETIN will find them republished here for a larger audience, but most of the chapters are new, especially written for this book.

COVERS WIDE RANGE

Stray Feathers, as the title implies, is essentially a collection of essays that reflects the range of our present knowledge of bird behavior and kindred subjects. Each of the sixty topics discussed in the volume is an independent unit that can be selected at random and enjoyed without reference to the others. The result is a distinctive collection of essays that serves as a skillfully conducted survey of much that is interesting in ornithology.

The author ranges the world for his subjects and focuses attention on the strange or little-known characteristics of each. While the curiosities of bird life are frequently emphasized, the book is in no sense an addition to the lamentable "gee whiz" school of natural-history literature that seeks merely to astound the reader. *Stray Feathers* not only presents the phenomenon but also seeks to interpret it and provoke the reader to further inquiry. In no instance is the treatment of a topic exhaustive, nor is it intended to be. For those who wish to pursue a subject further or check the author's sources, there is a useful appendix listing principal references by chapter headings.

HUMAN-LIKE CHARACTERISTICS

Layman readers may be astounded and often amused by the striking similarity of various habits in certain birds and in man. Birds that use cows as hunting dogs, birds that feed their prospective mates, birds that baby-sit or have co-op nursery-nests, birds that use tools, and other curiosities of the bird world have their human counterparts and may cause one to reflect upon the basis of our proclaimed superiority. The perceptive reader will note, however, that the author avoids capitalizing on his material by drawing unfounded anthropomorphic inferences. To Rand, the objective scientist, birds remain birds, vastly interesting in their own right. That his birds are often more entertaining than many of our human associates is no contrivance of the author.

The book is amusingly illustrated with sixty piquant line-drawings by Ruth Johnson, talented member of the Museum staff. Each of the cartoons is designed to suggest the central theme of its associated text and in this they are remarkably successful. The text and its illustrations are a happy combination. One can safely predict that a book so refreshingly different as *Stray Feathers* will pave the way for one entitled, *More Stray Feathers* by the same author and artist.

EMMET R. BLAKE
Associate Curator of Birds

INDIAN CORN IN OLD AMERICA. By Paul Weatherwax. The Macmillan Company, New York, 1954. ix—253 pages, 75 figures, 3 color plates. $7.50.

Indian corn or maize first became known to Europeans as a result of Columbus's initial voyage to America. When he failed to find a shorter route to the spices and silks of the East, the Spaniards turned their eyes to the gold of the New World. At the time they did not suspect that the discovery of maize was of far greater value than the golden treasures of the Aztecs, Chibchas, and Incas.

Archaeologists have long been interested in the history and origin of maize because of its important role in the development of Indian civilizations in Middle and South America. Botanists, also, are very interested in maize, and the ancient remains of Indian corn found by archaeologists furnish them invaluable evidence on its history and clues to the nature of its wild ancestors. Thus the problem of corn has become one for collaboration between anthropology and botany.

Paul Weatherwax is a botanist who has traveled among the corn-growing Indians of North, Central, and South America in pursuit of information on the varieties, methods of cultivation, and uses of Indian corn. In this book he sums up what he and other botanists have learned about maize during many years of study. He attempts to "reconstruct a picture of the corn plant and the system of household arts based on it as they existed in ancient America, with some consideration of the part that corn played in the everyday life, thinking, and the artistic expression of the peoples of the hemisphere before Columbus came."

Although the chapters on the morphology, growth, and genetics of maize are necessarily technical and cannot be fully understood without some elementary knowledge of botany, the style is stimulating and readable, and the interest of the text is enhanced by the author's well-selected photographs of excellent quality.

DONALD COLLIER
Curator of South American Archaeology and Ethnology

'THE ENGLISH PHYSICIAN ENLARGED' IS HERE

Recently a curious and interesting little book entitled *The English Physician Enlarged* was given to the Botany Library by Holly R. Bennett, of Chicago. It was written by Nicholas Culpepper, who described himself on the title page as "Gent. Student in Physick and Astrology." This copy, which was printed in London in 1714, is one of the many issues of a book that was first published in 1652. It aroused much indignant opposition among the orthodox medical practitioners of the time, who objected to what they considered Culpepper's unscientific methods. Believing that each disease was caused by a planet, its cure, according to him, was to be found in a plant controlled by an opposing planet, or occasionally "by sympathy," that is, by a plant controlled by the same planet that caused the disease. He described "such things only as grow in England, they being most fit for English bodies," gave astrological conditions under which the herbs should be gathered, the parts to be used in each case, and lists of the various ailments that could be cured by them. It was a very popular work among unscientific people for over a century after its first appearance—indeed, a version of it was published as recently as 1932.

EDITH M. VINCENT

Birds found in the Chicago region are exhibited in three habitat groups in Hall 20.

MUSIC OF INDIA—

(*Continued from page 5*)

equivalent of our violin. In addition to three or four main strings of gut or metal played with the bow, it has from fifteen to twenty-four additional metal strings which vibrate sympathetically and augment the sound although they are not bowed. It is a favorite instrument for dances, weddings—and beggars, especially religious mendicants.

MANDOLIN-LIKE INSTRUMENTS

A classical musical instrument of India is the *vina*, which might be regarded as a member of the mandolin family. The strings are played with plectrums or the fingernails, and resonance is provided by a pair of large gourds. More like our mandolins is the *sitar*, one of the commonest of the stringed instruments. It is played like the *vina*, but has a single resonating bowl made of half a large gourd. Among other instruments shown in the exhibit are: a two-stringed instrument made of a coconut shell; the *sankhu*, a conch shell played with a metal mouthpiece; the *vansi* or flute; various kinds of gongs; the *taus*, a stringed instrument with a bowl carved to represent a peacock and in consequence often called the "peacock fiddle," and the *nagasara* or Indian oboe, which is made both in wood and silver or other metals.

It should be pointed out that most of the names used above for instruments are the local ones by which they are known in the particular districts whence the Museum's specimens came. The same instruments, or their equivalents, are often called by totally different names in other regions of India, due to the great multiplicity of languages spoken within the country's vast realm.

ZOOLOGIST RETURNS FROM TRINIDAD

When paralytic rabies broke out in 1925 among the cattle in Trinidad, it was Dr. J. L. Pawan, government bacteriologist, who traced its spread to the vampire bat. Because of his interest in this investigation, he invited Colin Campbell Sanborn, the Museum's Curator of Mammals, to Trinidad to study the bats in order to prepare a key to all bats of the island. Under his National Science Foundation grant, Curator Sanborn spent about three weeks there in November.

All government officials were so cooperative in helping with permits, guides, and transportation that Curator Sanborn was able to visit eight localities in eleven days, seeing bats in various types of roosts, and to collect about 200 specimens representing 20 different species. In this field work he was especially aided by Arthur M. Greenhall, Curator of the Royal Victoria Institute Museum, and Errol Aché, Senior Bat-Inspector. The government has long maintained teams to control the vampire bats, and the inspectors know every cave, building, or hollow tree that harbors a bat roost. Both Greenhall and Aché will be co-authors of the key, with Sanborn.

It is estimated that nearly 50 different species of bats live in Trinidad. The fauna is mainly like that of the mainland, Venezuela, from which it is separated by about seven miles at the nearest point. A few species are confined to the island, however.

TWO-FACED CHARACTERS OF BENEVOLENT AIM

Although being two-faced is not something we are accustomed to boasting about, among the gods of ancient Rome standards were quite different. Janus, the deity after whom the month January is named, was conceived by the Romans as having two faces. Thus he was admirably fitted for looking into the past and future at the same

AFRICAN EQUIVALENT OF JANUS

time. New Year's Day was the principal festival of Janus, and on this occasion people were extremely careful of what they did and said because they felt that their actions and words would influence occurrences of the coming year. Being able to look two ways without turning one's head was regarded as useful in many other cultures as well. In the present century the natives of the Cameroons in Africa made skin masks (pictured above) that medicine men wore during ceremonies for casting out evil spirits. Such masks, which at one time were made of human skin, are now made of antelope hide.

Some of the world's most remarkable examples of craftsmanship in gold come from sites of prehistoric culture in Colombia. Examples may be seen at the Museum in Stanley Field Hall and in H. N. Higinbotham Hall of Gems and Jewels (Hall 31).

NEW MEMBERS

(November 16 to December 15)

Associate Members

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GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Dr. J. F. T. Berliner, Chicago—10 hand-samples of wood (Larrea tridentata), El Paso, Tex.; Eleanor McGilliard, Chattanooga—2 Silphium; Museum National d'Histoire Naturelle, Paris—11 Venezuelan plants; Dr. E. Naylor, Fayette, Ia.—Sterculia platanifolia, Tex.; T. J. Newbill, Ft. Lauderdale, Fla.—2 Anthurium, Colombia and Panama; E. J. Palmer, Webb City, Mo. —325 plants

Department of Geology:

From: Max Robert, Paris—phosphate ore containing shark's tooth, Algeria

Department of Zoology:

From: Chicago Zoological Society, Brookfield, Ill.—1 turtle, 2 snake skeletons, Madagascar and Africa; Roger Conant, Philadelphia—2 garter snakes (neotypes), South Carolina; Dr. David Cook, Detroit—29 water mites (11 holotypes, 18 paratypes)

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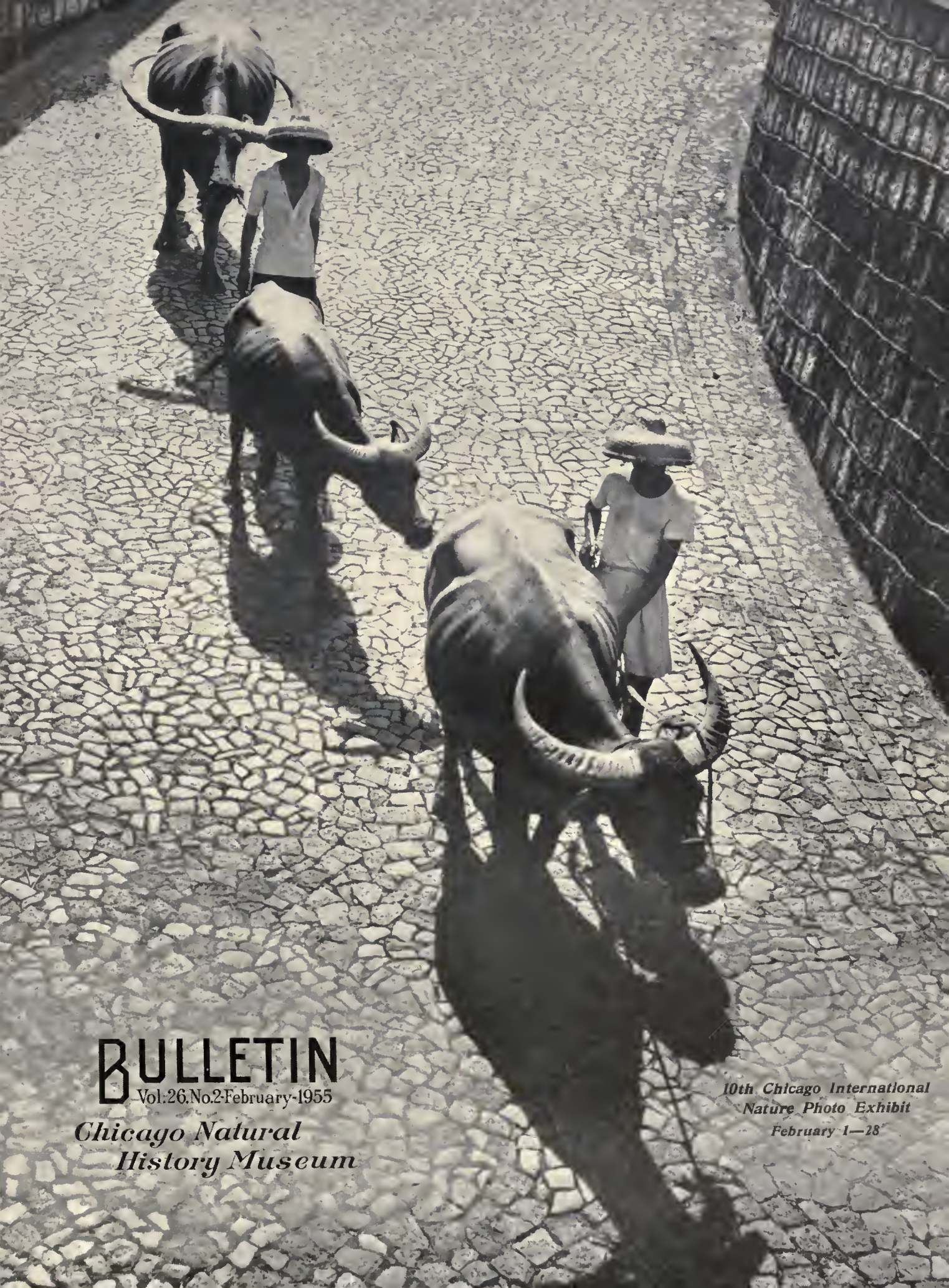

BULLETIN

Vol. 26, No. 2 February 1955

Chicago Natural History Museum

10th Chicago International Nature Photo Exhibit

February 1—28

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

EXPEDITIONS OF 1955

Compared with some years, the Museum's 1955 program of expeditions is modest in scope, limitations being imposed by the funds available.

The largest and most ambitious project, as it has been for some years past, will be the Archaeological Expedition to the Southwest, which will go into its 21st season of operations during the summer (there have been nine previous seasons in Colorado and eleven in New Mexico). Dr. Paul S. Martin, Chief Curator of Anthropology, who has directed these expeditions, will again be leader, and Dr. John B. Rinaldo, Assistant Curator of Archaeology, will be his principal associate. Gradually these expeditions have been reconstructing some 4,000 years of the culture and history of extinct tribes. The archaeologists may complete their work in New Mexico this season and transfer their activity to sites in Arizona.

Dr. Julian A. Steyermark, Curator of the Phanerogamic Herbarium, is already in Venezuela on a botanical expedition to the "lost world" area. This work is being conducted as a joint enterprise of the Museum and New York Botanical Garden. Dr. John Wurdack of the latter is co-leader with Curator Steyermark.

Emil Sella, Curator of Exhibits in Botany, will collect material for the American-woods exhibits, and other botanical specimens, on an expedition during the summer to the coast of Washington, Oregon, and northern California.

Dr. Sharat K. Roy, Chief Curator of Geology, will conduct an expedition to several Central American countries, where he will continue his research on volcanoes.

Dr. Karl P. Schmidt, Chief Curator of Zoology, will collect reptiles and amphibians in New Mexico and Arizona. He will be accompanied by D. Dwight Davis, Curator of Anatomy, and Hymen Marx, Assistant in the Division of Reptiles.

Henry S. Dybas, Associate Curator of Insects, is scheduled for an entomological expedition in Georgia and northern Florida. Loren P. Woods, Curator of Fishes, is now in southwestern Mexico collecting marine fishes in tidepools of the Acapulco area. He will also collect in the Salina Cruz region.

Dr. Robert L. Fleming, a Museum Field Associate, will return to Nepal and resume the collecting, principally of birds, in which he has been engaged for several years. Others who will continue collecting begun in previous years are Field Associate D. S. Rabor in the Philippines and Celestino Kalinowski who is making general zoological collections in Peru on the Pacific slopes of the Andes. Gerd H. Heinrich, who spent all of last year on a Museum expedition to Angola (Portuguese West Africa) financed by the Conover Game Bird Fund, will complete his work and return early in 1955.

Although not going on actual expeditions, a number of other members of the scientific staff will engage in various study projects: Rupert L. Wenzel, Curator of Insects, at the Canadian National Museum in Ottawa; Colin C. Sanborn, Curator of Mammals, at museums in New York and Washington, D.C.; Curator of Fishes Woods at various western museums; and Miss Pearl Sonoda, Assistant in the Division of Fishes, at a marine biological station on the east coast.

Hughston McBain Elected 2nd Vice President

Hughston M. McBain, Chairman of the Board of Marshall Field and Company, was elected Second Vice-President of Chicago Natural History Museum at the annual meeting of the Board of Trustees held on January 17. Mr. McBain, who has been a Museum Trustee since 1946, succeeds Samuel Insull, Jr. Mr. Insull remains a Trustee, in which capacity he has served since 1929; but because of his need for more time to devote to personal business, he asked to be relieved of the vice-presidency. He had been a vice-president since 1946.

At the same meeting Stanley Field was re-elected President for his 47th consecutive year in that office. All other officers were re-elected. They are: Marshall Field, First Vice-President; Joseph N. Field, Third Vice-President; Solomon A. Smith, Treasurer; Colonel Clifford C. Gregg, Director and Secretary; and John R. Millar, Assistant Secretary.

THIS MONTH'S COVER

An example of a nature photograph that combines realism with an effect that could be a conscious design is "Bull Parade," which appears on our cover. It is the work of Kan Hing-fook, of Hong Kong, who submitted it as an entry in the Tenth Chicago International Exhibition of Nature Photography to be held in Stanley Field Hall from February 1 to 28 under the joint auspices of the Nature Camera Club of Chicago and the Museum. A full account of this event appears on page 5.

FOUR ADDED TO CONTRIBUTOR ROLL

The names of four friends of the Museum were added to the roll of Contributors by the Trustees (Contributors are those whose gifts of funds or materials total between $1,000 and $100,000 in value, and their names are inscribed on a plaque in perpetuity). Three of the new Contributors are Mrs. Hermon Dunlap Smith, of Lake Forest, Illinois, who has long made valuable contributions to the Division of Birds; Evett D. Hester, of Jeffersonville, Indiana, donor of notable Philippine ceramic collections; Dr. Robert L. Fleming, an American educator stationed in India, who has given the Museum important Asiatic zoological collections. Mrs. Smith and Dr. Fleming also serve in volunteer capacities on the Museum staff as Associate and Field Associate respectively; Mr. Hester, holder of the Thomas J. Dee Fellowship, is working on research in the Department of Anthropology. The fourth addition to the Contributor list is the late Arthur L. McElhose, of Arlington Heights, Illinois, elected posthumously in recognition of his gift of a valuable collection of insects.

'Canada North' Film February 27

The third "screen-tour" in the current series offered by the Illinois Audubon Society will be presented Sunday afternoon, February 27, at 2:30 o'clock in the James Simpson Theatre of the Museum. "Canada North," a film of the life of ptarmigans, golden plover, elk, reindeer, and the great white whale, will be shown. The accompanying lecture will be given by Bert Harwell, who is well known to Audubon audiences. The general public is invited, and admission is free. Members of the Illinois Audubon Society and Members of the Museum are entitled to two reserved seats on presentation of their membership cards before 2:25 P.M.

WEB OF FANTASY AND FOLKLORE SURROUNDS MUSHROOMS

By JANE ROCKWELL

MUSHROOMS were shrouded in mystery and superstition long before Pliny recorded Nero's fatal mushroom poisoning of an entire assemblage of banquet guests as well as the prefect of the guards and a small host of tribunes and centurions. Others who have fallen victim to poisonous mushrooms include Pope Clement VII, Emperor Jovian, Emperor Charles VI, Emperor Claudius, the widow of Czar Alexis, and Euripides' wife, two sons, and daughter, not to mention thousands of persons not recorded by name on the pages of history since mushroom gatherers set out to distinguish between toxic and non-toxic delicacies for their tables.

Drawing by Margaret G. Bradbury

RING AROUND THE MUSHROOM

An interpretation of folk legends that describe the antics of elves and sprites as they dance around the mysterious fairy-ring mushroom.

Among common fallacies that have grown up in the long history of mushrooms is that poisonous mushrooms or toadstools, as they are thought to be, are responsible for warts, lightning, and witchcraft. The seemingly magic growth of mushrooms has caused them to be associated with fairies, elves, witches, and other things supernatural. Puffballs were thought to be sown by elves, the trembling fungi were described as fairies, and witches' butter and the cup fungi were called elfins' saddles or cups and fairies' baths.

Contrary to the popular belief that all mushrooms are non-poisonous and all toadstools poisonous, there are species that are harmless and others that are deadly poisonous among both toadstools and mushrooms. Actually most are edible, but toxic and non-toxic plants may belong to the same group. Consumption of poisonous mushrooms may bring about acute indigestion or death. Some individuals can eat fleshy fungi without ill effect while others, eating the same plant, may suffer violent reactions. The average person who does not go in search of mushrooms is quite safe because the mushrooms he buys are cultivated on mushroom farms.

VARIED COLORS

Formerly mushrooms were classed in one genus, Agaricus, but after so many different species were found to exist—more than 2,000—they were divided according to whether their spores were white, pink, yellowish, brown or black. Different species have scarlet, violet, yellow, green, orange, white, brown, or gray caps. Their texture may be leathery, tough, brittle, fleshy, or watery. Some are tasteless; others are bitter, peppery, mealy, or have a nutty flavor. Some have repellent odors while others have a pleasant smell, like ripe apricots or anise. One genus, Lactarius, has a milky juice that may be white, orange, or even blue in some species. One species may, when touched, sting tender skin.

Many persons do not regard mushrooms as plants, but they are even more disinclined to consider them animals although fungi do have the animal-like characteristic of requiring ready-made or organic food since they are unable to obtain sustenance from earth, air, and water as ordinary green plants do. Consequently they are forced to live like scavengers on other plants or animals, dead and alive. Members of the flowerless division of plants, they are nearly at the bottom of the ladder of plant evolution. Classed as higher fungi, their close edible relations are the puffballs and morels while their more distant relatives are rusts, smuts, blights, mildews, and molds.

Most common of mushrooms, both cultivated and growing wild, is *Agaricus campestris—the* mushroom to the layman. Found mostly in pastures and grassy places, not in woods, its caps are usually white and its gills pink, later changing to brown. Most deadly are *Amanita muscaria* or fly agaric and *Amanita phalloides* or death angel. Poisonous mushrooms often make up in numbers what they lack in volume of separate species. Unwholesome mushrooms produce bad effects quickly while the poisonous fungi take eight to fifteen hours to do their lethal job.

Methods for testing poisonous mushrooms, still practiced in many places, have been passed down through the ages. Mushrooms are said to be poisonous if a silver spoon, coin or like object dipped into a dish of cooked mushrooms turns black, if they peel easily, are brightly colored, have an undesirable odor or bitter taste. All these so-called tests have been proved meaningless.

FAIRY LEGENDS

Fantasy and superstition always have surrounded fairy rings formed by *Marasmius oreades* and other species. Because these rings grow rapidly in circumference and are often accompanied by rings of fresh grass that highlight them and make them easily discernible, sometimes from a great distance, folk legends have evolved concerning fairies, elves, and goblins who danced moonlight rigadoons around the mysterious fungus-haunted circles. Some rings attain a reputed diameter of 200 feet or more and an estimated age of more than 250 years. However, most rings rarely attain a diameter of more than 20 feet.

A widespread belief among peasants in Europe was that mushroom circles brought luck to the household in whose fields they were found. It was therefore most necessary not to offend the fairies responsible for this

(*Continued on page 7, column 2*)

New Public Relations Aide on Museum Staff

Miss Jane Rockwell has been appointed Assistant in Public Relations on the Museum staff. Miss Rockwell is a graduate (B.A.) of the University of Nebraska, where she majored in journalism and English; she also engaged in post-graduate studies at New York University, where her father, Dr. John G. Rockwell, is a professor of psychology. Before coming to the Museum she worked for several years as a reporter and feature writer for the *Lincoln* (Nebraska) *Star* and was news editor and columnist for the *Torrington* (Wyoming) *Telegram*. She was a member of the publicity staff of the J. C. Penney Company, New York, and assistant editor of that company's house organs. At the Museum she will work in all phases of newspaper, magazine, radio, and television publicity, and in editing the BULLETIN, in association with H. B. Harte, Public Relations Counsel since 1927. She succeeds Mrs. Alexander (Barbara) Polikoff, whose resignation was announced in the January BULLETIN.

Jane Rockwell

BOOKISH BIRD-CENSUS: A FIRESIDE GAME

By AUSTIN L. RAND
CURATOR OF BIRDS

"CAN WE GET any index as to just how bird-conscious people are?" I thought as my wife and I sat talking in front of our magazine-laden coffee table one evening just after Christmas. Thus was born the idea of a bookish Christmas bird-census.

To many a bird lover, the Christmas bird-census is one of the important events of Christmas time. The origin of the custom goes back to 1900 and Frank M. Chapman, who did as much as any one person to make people bird-conscious. He proposed that

the traditional sport of a Christmas shoot be replaced by a new game of making a list of all the birds one could see on a single day near Christmas—a Christmas bird-census. The idea caught on. Now thousands of people, from Alaska to Florida, take part in making these lists that are published in nature magazines, especially *Audubon Magazine*, and often in local newspapers.

RIGID RULES SET UP

The census has become more than a game, too, for with rigid and complicated rules it has collected a bulk of information over the years on which scientific papers have been based. But casually or seriously done, this modern census is easier on the birds than was the old-time Christmas shoot, and it has helped make people more bird-conscious.

We ran our bookish census by going through the issues of the current periodicals on our coffee table and borrowing a couple from our neighbors, who incidentally had their living room papered in green enlivened by male cardinals in brilliant red full plumage. We made our own rules. No nature or bird magazines to be used; only illustrations of birds, identifiable to family at least, to be used; and a score of one to be given to one kind of bird used in one connection—for example, three crows on a branch would count as one, and two different pictures of doves in the same article would count as one; only domestic magazines to be used.

In two hours we ran through 15 periodicals as follows:

1 weekly paper	0 birds
2 daily papers	2 "
2 slick magazines	2 "
2 topical slicks	10 "
1 news magazine	1 "
2 popular science and travel	8 "
1 state advertising	2 "
1 literary	2 "
4 comic books	0 "
16 periodicals	27 birds of 23 kinds

The systematic list is as follows:

Kind	*Number of Birds*
Ostrich	2
Penguin	2
Albatross	1
Fulmar	1
Cape pigeon	1
Frigate bird	1
Pelican	1
Flamingo	1
Goose	1
Condor	1
Eagle	2
Ruffed grouse	1
Mearns quail	1
Valley quail	1
California quail	1
Macaw	2
White-winged dove	1
Road-runner	1
Owl	1
Toucan	1
Cardinal	1
Jackdaw	1
Crow	1
23 kinds	27 birds

Not-acceptable records. An article on modern design in silk-screen printing showed some 35 items that were "birds," whose characters might have been borrowed from hens, lyre birds, owls, eagles, and nighthawks, several being incorporated into the same individual. Geese, turkeys, and domestic fowl advertised as food were not included.

Unfigured species. At first we thought to skim the text for mention of birds but soon found that it was impractical. Our eyes wouldn't stand it. But we did hit on a few; for example, a couple of travel articles contained comments on birds that would have greatly swelled the list.

However, a daily paper, otherwise birdless, contained three news items that should be mentioned: a carrier pigeon, absent for nine years, had turned up; singing caged canaries had been installed in Tokyo police headquarters to calm irate motorists arrested for traffic violation; and seagulls had been using United Nations headquarters as a perch from which to open clams by dropping them to the street below.

Foreign items. By excluding these a particularly rich niche was omitted, notably the 38 species of birds mentioned in the Bible portrayed in a two-page spread of the Christmas number of the *Illustrated London News*.

I was surprised that the list was so small. I can remember so many news stories, articles, and illustrations that I've seen. But evidently they don't appear every day and my memory has telescoped them, for the above list is based on a true random sample, selected without planning, though undoubtedly we missed some birds. Of course, the time of year is bad for birds, with life at its lowest ebb. It is perhaps typified by two "birdish" cartoons that I couldn't include for obvious reasons: one was a hunter in a duck blind with a duck call, but not a duck in sight; another, a political cartoon, showed, among other things, a bird cage with open door and a label "dove of peace," but not a bird anywhere.

Noteworthy also is that few birds were recorded more than once, only the ostrich, penguin, eagle, and macaw, and these but twice.

SOME 'STOCK CHARACTERS'

Only one of our familiar songbirds, the cardinal, is on our list, and that is in an advertisement for a bird book. In the list there are very few bird names that would not be familiar to the general reader of a half century ago, and some are age-old standbys, stock characters in literature: ostrich (Bible), owl (Athena), penguin (*Penguin Island* of Anatole France), albatross (*Ancient Mariner*), pelican (heraldry), flamingo (*Alice in Wonderland*), dove (of peace), eagle (heraldry), and goose (guarding Rome), for instance.

Comparing native birds with exotics we find that 15 are natives of the United States and 8 are exotic. The latter birds represent tropical America, Europe, Africa, and Antarctica.

Eleven of the 27 birds were used in advertisements in such ways as a toucan inviting you to "come to Caracas"; an owl asking, "Do you know?"; photos of game-bird models; and crow, macaw, eagle, penguin, and a cardinal decorating ads with little relevancy. A macaw, labeled "a sarong-snatching parrot," was part of a night-club entertainer's advertisement.

NON-COMMERCIAL ILLUSTRATIONS

Of the 16 birds not in advertisements, one was in a reproduction of a Breughel painting, six were in reproductions of old illustrations prepared for *Swiss Family Robinson*, eight were illustrations of travel articles, and one sketch, illustrating the alleged enormous appetite of an ostrich, decorated an article on California culture.

With but a single census you can't make comparisons. Perhaps, over the years, further censuses by more people and with wider coverage will enable us to chart trends and show whether or not people are becoming more bird-conscious and if so, how much.

INTERNATIONAL NATURE PHOTO EXHIBIT, FEBRUARY 1–28

JUDGING has been completed, and hundreds of persons in all parts of the world are waiting to learn the winners of the Tenth Chicago International Exhibition of Nature Photography, which will be held from February 1 to 28 at the Museum.

TIMBER LINE

Entered in Plant-Life Division of Nature Photography Exhibit by M. G. Smith, of Fresno, Calif.*

Jointly sponsored by the Museum and the Nature Camera Club of Chicago, the show is the largest nature-photography contest and one of the largest photography exhibits held anywhere. Approximately 200 prints and 800 color transparencies have been selected for exhibition from over 3,800 entries. Amateur and professional photographers from the United States, Canada, Latin America, Europe, the Orient, Africa, Australia, and New Zealand submitted a maximum of four prints and four color slides in three classifications: *animal life*, *plant life*, and *general* (which includes scenery, geographical formations, clouds, and other natural phenomena that do not belong in the two specific biological sections).

Medals and ribbons will be awarded in all classifications of photographs and color slides. Honorable-mention awards by the Nature Camera Club will be given photographs in all classifications. Two special color-transparency awards will be presented by the Nature Division of the Photographic Society of America for the best photographic work using complementary colors and adjacent colors. Names of the winners will be placed on a bronze plaque contributed by Mrs. Myrtle R. Walgreen, Camera Club member.

The first nature-photography contest in Chicago was held in 1943 when an exhibition of prints was presented by the Museum. In 1946 the Nature Camera Club suggested that its membership and the Museum jointly sponsor a contest that would include both prints and color slides, and the exhibition has been held every year since. The Camera Club, which holds its program meetings at the Museum on the second Tuesday evening of each month, is made up of both amateur and professional photographers.

Judges for the annual contest were May Watts, Fred Richter, and Erik Sorensen, Chicago photographers; M. Kenneth Starr, Curator of Asiatic Archaeology and Ethnology at the Museum; and Homer E. Holdren, of the Museum's Division of Photography. Prints will be on exhibition in Stanley Field Hall, and color slides will be projected on the screen of the Museum's James Simpson Theatre at 3 P.M. on two Sundays, February 13 and 20. A list of prize winners and honorable mentions will appear in the March BULLETIN.

HONEYBEES AND QUEEN CELL

Entered in Animal-Life Division by M. P. Ochotta, of Edmonton, Alberta, Canada.*

*Because this "Bulletin" went to press before the judges announced their decisions, publication of photographs in this issue does not indicate acceptance of the pictures for the exhibit.

MUSEUM FEATURED IN COLLIER'S

One of the most striking and extensive tributes ever paid by a national magazine to the value of a museum is an article about Chicago Natural History Museum that appears in the February 4 issue of *Collier's* magazine. Included are six full pages of unusually brilliant color-pictures of the Museum's North American Indian exhibits. The commentary, by Martha Weinman of *Collier's* staff, emphasizes the fact that this Museum has been a leader in the trend away from stodgy old-fashioned storage-type exhibition cases, overladen with monotonous rows of objects, to the modern technique of highly selective exhibits embellished by modern concepts of the use of color, lighting, and other artistic devices to tell an integrated story with a few specimens. The use of elaborate three-dimensional lifelike dioramas to produce in the visitor an awareness of the main elements of a culture is also stressed.

Copies of this issue of *Collier's* are available at the Book Shop of the Museum. The article is the second in a series on leading museums of the United States.

STAFF NOTES

Bryan Patterson, Curator of Fossil Mammals, has returned to his desk at the Museum from his assignment in Argentina where, since September, under a Guggenheim Foundation fellowship, he has been engaged in a paleontological research project .... **Dr. Karl P. Schmidt,** Chief Curator of Zoology, has been elected an Honorary Fellow of the newly formed Indian Academy of Zoology, with headquarters at Agra. Recently he lectured on Peru at the University of Missouri and spoke before a number of seminars .... **Mrs. Mary Sue Hopkins Coates,** Secretary of the Department of Geology, has resigned to take a position as assistant to a consulting geologist in Chicago.

ATTENDANCE LAST YEAR TOPPED MILLION MARK

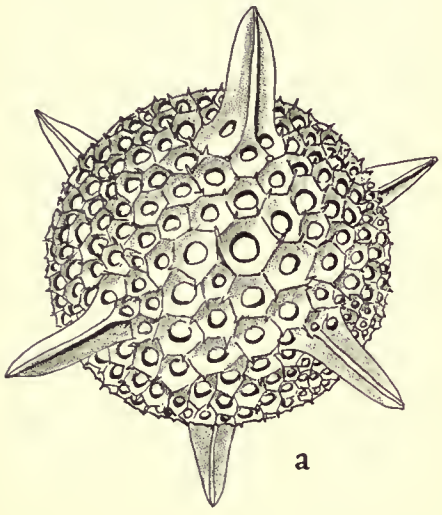
The number of visitors received at the Museum during 1954 totaled 1,142,200. The attendance has remained over a million annually since the mid-1920's. Of the 1954 visitors, 1,005,777 or close to 88 per cent were admitted free (adults coming on Thursdays, Saturdays, and Sundays when admission is free, children on all days, and special classes of visitors such as teachers, members of the armed forces, Members of the Museum, etc.) Only 136,423 paid the 25-cent admission fee charged on other days.

While an attendance of more than a million persons a year is a gratifying reflection of the effectiveness of the Museum, it does not tell the whole story. The institution's influence actually reaches hundreds of thousands of others every year through the traveling exhibits, lecturers, films, and slides it sends to the schools, through publications of the Museum press, and through newspapers, magazines, radio, and television.

AN 'ANIMAL' SOMETIMES MAY BE A PLANT OR VICE VERSA

By EUGENE S. RICHARDSON, Jr.
CURATOR OF FOSSIL INVERTEBRATES

"YOU CANNOT sometimes always tell . . ." goes a bit of jargon heard in circles that avoid over-academic English. It often applies very appropriately to the



problem a biologist faces in determining whether an organism should be classified as an animal or a plant.

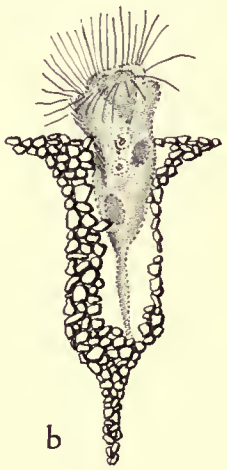
In Frederick J. V. Skiff Hall (Hall 37) the exhibits of fossil invertebrates and plants are arranged in two parallel sequences on the north and south sides of the hall, respectively. The fossils on the south side are arranged in a time sequence, according to the periods of geologic history in which they flourished. On the north side of the hall similar fossils are displayed in a biological sequence, starting with the simplest forms and running through the various major groups to the most complex creatures. Following the fossil invertebrates come the fossil plants, seemingly a completely different sort of life.

Yet, if we turn to the case showing the simplest of the invertebrates and study them a bit, we find that the distinction between plants and animals is somewhat obscure. Now, it's easy enough to be certain that a cactus is a plant and a porcupine an animal, even though you may regard this as a minor matter when you run into either one in the dark. The cactus, like a proper plant, stays in one place and makes its food supply from sun, air, and soil minerals, while the porcupine, in true animal fashion, wanders about and eats solid food.

The simplest invertebrates (Protozoa) and the simplest plants (Protophyta) are very much alike in that their tiny bodies, microscopic in size, are not made of a number of cells, as are the bodies of the larger plants and animals. They may be considered as single cells or as undivided bodies. Many of them have both the plant characteristic of manufacturing their own food and the animal ability to move about and capture solid food, so that there has been a running argument for about three hundred years as to just which kingdom they should be put in. It was suggested as early as 1860 that they should be considered a separate kingdom, and the name Protista is now used in some circles to apply to the group. Thus it seems that there are four kingdoms instead of the traditional three: Animal, Mineral, and Vegetable.

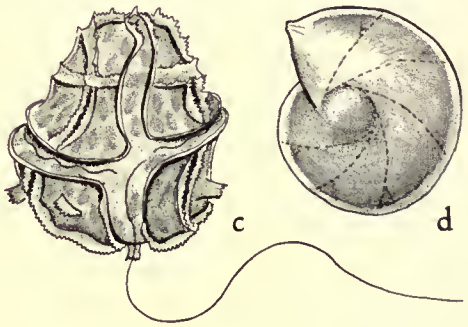
FIRST CALLED ANIMALCULES

The first man to see a living protistan was Anton van Leeuwenhoek, the inventor of the microscope. Peering through his new gadget in 1676, he watched a company of "animalcules," as he called them, disporting themselves in a drop of pond water. Even though the microscope had never made them visible, the protistans would have been important to man, as they include germs of many diseases and the factors of rotting and decay.



Other protistans produce visible effects by sheer force of numbers, as individuals of *Haematococcus pluvialis* suddenly multiplying in rainwater pools, coloring them red and impelling witnesses to report "rains of blood"; or *Noctiluca scintillans*, floating in the ocean in countless millions, the combined phosphorescence of many small individuals making the water glow where it is disturbed.

On the exhibit screen in Hall 37 are two examples of the group Flagellata, or whip-bearers, the Silicoflagellata and the Peridiniids (or Dinoflagellata), which illustrate well the confusion that may reign in attempting to assign these simple living things to either the plant or the animal kingdom. They are free-moving, and can capture their own food, which of course means that they are perfectly good animals, but on the other hand the Silicoflagellates have tests (shells) made of silica, and the Peridiniids have tests of cellulose, both of which are substances commonly found in plants. Furthermore, some of their very close relatives are green and contain chlorophyll, the amazing green pigment of plants, and can therefore manufacture their own food from sunlight and gas, as our friend the cactus does; therefore, they must be plants. The solution generally adopted is that the zoologists claim that they are animals and the botanists claim that they are plants, and both groups of scientists study them and admire them and covet them. This is much more satisfactory than leaving them in a crack between



the two fields with no attention being paid to them at all.

Protistans, then, form a perfectly good biological unit that may be easily defined according to the characters shared by all its members—that their bodies are not composed of individual, differentiated cells, but are "acellular." With the Protista removed, the other two kingdoms are now much easier to define than they used to be when they intergraded.

Since this convenient and entirely logical acknowledgment of the fourth kingdom was first proposed about a century ago, it is perhaps rather surprising that it has been ignored by most practicing biologists in the meantime. In January of this year, however, it was formally brought out again, dusted off, and given very respectable backing with the publication of the first volume of the chapter "Protista" of the new *Treatise on Invertebrate Palcontology*,

KEY TO ILLUSTRATIONS

Are they plants, animals, or members of a fourth kingdom distinct from the traditional animal, vegetable, and mineral realms?

In the drawings on this page, Dr. Richardson shows some of the kinds of fossil creatures that present this problem. They are called, in general, protistans, and the specific ones shown are: (a) Radiolarian, with shell of silica; (b) Tintinnid, with shell made of mineral grains fastened to organic membrane of the animal that is also shown; (c) Peridiniid, with cellulose shell; (d and e) Foraminifera, with limy shells.

sponsored by the Paleontological Society, the Society of Economic Paleontologists and Mineralogists, and the Geological Society of America in this country and the Palaeontographical Society of Great Britain. It remains to be seen of course, whether the new kingdom will now be widely accepted, but it is at last off to a good start.

By whatever name they are called, the protistans are a fascinating study. Small though they are, they are far from simple, and those forms that have tests and can be preserved as fossils are objects of delicate beauty under the microscope. The economic importance of the Foraminifera, the most illustrious of the protistans, has been mentioned in the BULLETIN ("Fingerprint Clues in the Quest for Oil," August, 1954). Samples of Silicoflagellates, Peridiniids, Foraminifera, Tintinnids, and Radiolarians are shown in the exhibit in Skiff Hall, where they are represented by plastic models, as much as 1,000 times life-size, created by Artist Joseph B. Krstolich, of the Department of Zoology.

COLLECTION OF MOTHS GIVEN TO MUSEUM

BY RUPERT L. WENZEL
CURATOR OF INSECTS

During the past year the Museum received a collection of North American butterflies and moths as a gift from the estate of the late Arthur L. McElhose. The collection, which was accessioned recently, contains approximately 12,000 specimens. It is a particularly desirable acquisition because it contains more than 700 species of Microlepidoptera, of which only a few were represented in the Museum's collections.

The Microlepidoptera is a large and important group that consists of a number of families of moths, with about 5,000 species in North America. It includes many familiar and economically important species, such as the codling moth, the European corn borer, the oriental fruit moth, the clothes moths, and many leaf rollers and miners. One species, the pink bollworm moth, is regarded by some entomologists as a national menace because it may be responsible for the loss of as much as half the cotton crop in certain areas in the southwestern United States, which produce much of this highly important crop.

Most of the species of Microlepidoptera, however, are of little or no economic importance. Many are of interest because of their unusual habits. Of these, the public probably is best acquainted with *Laspeyresia saltitans*, the Mexican jumping-bean moth, whose larva lives principally within the seed pod of a Mexican spurge, *Sebastiana pringlei*. The larva causes the seed pod to jump by throwing itself from one side to the other within the pod.

McElhose owned and operated a bath and massage studio in Arlington Heights, Illinois. He was well known locally as an amateur lepidopterist and served as secretary of the Chicago Entomological Society from 1940 to 1943. His collection included the collection made by his brother, the late Henry McElhose of Ilion, New York, another enthusiastic and well-known amateur, who was a charter member of the Entomological Society of America. These two men exemplify the kind of amateurs who, even though they publish little, make a valuable contribution to their field of interest through the careful amassing of well-documented collections, that, after passing to a museum, serve as a source of study material for future investigators.

MUSHROOM FANTASY—

(*Continued from page 3*)

phenomenon. Young maidens made a practice of beautifying their skin by bathing in the "fairy dew," and took great care not to step within the rings lest the angered fairies send blemishes to plague them.

Shakespeare, in *Midsummer Night's Dream*, comments on the country people's belief that elves and fairies dance within the rings at night, seating themselves on the ring's dewy cupolas. Titania, while quarreling with Oberon, tells of the rage of the winds because the fairies no longer dance and of the "contagious fogs" that they "in revenge have sucked up from the sea." One result of the spiteful flood, she says, is that the "nine men's morris is fill'd up with mud." Morris means the dance of the nine men or gnomes who, after their Puck-like expeditions of malice, were said to dance with joy in the moonlight meadow within the mushroom rings. A vestige of that belief can be seen today in the conviction of many gardeners that growth of the mushroom is influenced by the changes of the moon.

A visit to the Hall of Plant Life (Hall 29) of the Museum will reveal a wealth of information about these controversial and exciting fleshy fungi.

As in early days in Europe, an itinerant barber sometimes acts as a surgeon among African natives. He relieves pain by bleeding with a hollow horn. The wide end is cupped over a cut on the site of pain, and the operator sucks air from the horn and plugs the hole at the tip with a pellet of wax, applied by the tip of his tongue. Such horns are shown as part of a barber's equipment in Hall D.

A "family tree" of mammals, including man, illustrating the manifold inter-relationships, is on exhibition in George M. Pullman Hall (Hall 13).

Lectures Begin March 5 . . .

PROGRAMS ON SATURDAYS FOR ADULTS, CHILDREN

The two annual spring series of Museum programs—Saturday afternoons for adults and Saturday mornings for children—will begin on March 5 in the James Simpson Theatre and continue throughout March and April. The lectures on travel and science for adults are at 2:30 P.M. The free motion-pictures for children are at 10:30 A.M.

The story of "Brazil" in color-film on March 5 will open the Saturday-afternoon lectures, which are provided by the Edward E. Ayer Lecture Foundation Fund. The lecturer will be Eric Pavel, a native Brazilian, who is film director for the Pan American Press and Film of Sao Paulo. He will show his films of Bahia, Rio de Janeiro, and the Amazon jungle, one of the world's least-known wildernesses. Included will be underwater shots of tropical fishes and marine plants, a fish-spearing expedition, glimpses of the teeming animal-life of the country's vast interior, visits to primitive Indian tribes, and scenes at Iguassu, the world's largest waterfalls. Pavel's films also document Brazil's great industries—coffee, sugar, and mining.

No tickets are necessary for admission to this and the eight subsequent illustrated lectures on Saturday afternoons in March and April. A section of the James Simpson Theatre where the programs are presented is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing. Seats will be held in the Member's name until 2:25 o'clock on the lecture day. Because of limited accommodations it is necessary to restrict admission to the Saturday-afternoon lectures to adults.

"Drums for a Holiday," a dramatic and colorful film of the forest people of Africa's west coast, will be the opening attraction on March 5 of the Saturday-morning entertainments for children, which are presented by the James Nelson and Anna Louise Raymond Foundation. The film shows the life of the Ashanti tribes on the Gold Coast and the growing, harvesting, and shipping of coconuts.

Complete schedules of the programs for both adults and children will appear in the March issue of the BULLETIN.

The faculties and students of all educational institutions are offered full use of the facilities of the Museum. Many schools at all levels—grade schools, high schools, colleges, and universities—have regular organized programs in which the Museum is recognized as a prime source of information.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

BIRDS THE WORLD OVER. By Austin L. Rand and Emmet R. Blake. Chicago Natural History Museum Press. 96 pages, 51 illustrations. Price $1.50.

Birds the World Over is a once-over of the birds exhibited in the Museum's Hall of Habitat Groups of Birds (Hall 20). It is designed as a guide to the hall, but it was written also in the hope that the visitor might leave the Museum with a memento that would enable him to study and enjoy some of the most remarkable landscapes of the world with their bird inhabitants long after his visit to them in the Museum.

As the authors have emphasized, our exhibition of birds in habitat groups provides a schematic introduction to the geography of birds and to their ecology as well. All of the principal regions of the animal geographer are represented, and when the remaining spaces in the hall are filled, the representation of bird habitats will be a most satisfactory achievement in the museum techniques of visual education.

One might wish that some of the stories that lie behind so many of the groups had been incorporated into the text. The authors write of the Montezuma oropendula: "All of the nests were suspended in a small area at the very top of a towering tree that measured almost seven feet in diameter at the base and was well over 100 feet high." There is no clue as to how the nests were obtained. It happens that I can relate how those nests were collected. Blake and I got up before 3 o'clock in the morning to take advantage of the coolness of the dawn. We reached the tree just at 3 with our lanterns and took turns chopping with the four-pound double-bitted ax brought from Wisconsin for the purpose. One of us chopped until he was out of breath, and then rested while the other chopped. By the good fortune that the wood was soft, the tree crashed to the ground at 9 o'clock. We had been sad in thinking of the destruction of a whole nesting colony of the big raucous birds as a sacrifice, if not to science, to visual education. Our relief was intense to find so few of the nests occupied with eggs or young that we obtained just enough specimens, in all, for the group as it had been planned and for the study collections.

The study of birds is so popular and has called forth such an ample literature that this field has become one of the best of all avenues through which the amateur can enter the field of natural history. It is perhaps not sufficiently realized that the Museum's three-dimensional exhibits and "real" mounted birds form a unique supplement to the literature. The Museum's collections of birdskins for study provide one of the cornerstones for the continuing additions to the literature about birds; the Museum's exhibition halls form the antidote against too great dependence on books. Here the visitor can supplement, even on the most inclement day, that other antidote to bookishness—study of wild-life in the field.

KARL P. SCHMIDT
Chief Curator of Zoology

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Geology, Vol. 10, No. 19. *Fauna of the Vale and Choza, 9; Captorhinomorpha.* By Everett Claire Olson. July 29, 1954. 8 pages. 15c.

Fieldiana: Zoology, Vol. 35, No. 3. *Check List of North American Water-Mites.* By Rodger D. Mitchell. August 31, 1954. 44 pages. 75c.

NEW MEMBERS

(December 16 to January 14)

Associate Members

Robert T. Drake, Louis G. Glick, Dr. Felix Jansey, Maurice B. Mitchell, Peter J. Spiegel, W. J. Williams

Sustaining Members

Patrick H. Hume, Mrs. Edward P. Lay, John Alden Morgan

Annual Members

Carlyle E. Anderson, A. W. Bernsohn, Carl A. Bick, Dr. Eugene Bodmer, Mrs. Robert T. Borcherdt, Joseph Broska, Charles F. Cutter, Rev. Walter L. Fasnacht, Robert S. Faurot, Norman W. Forgue, Edward E. Gardner III, Herbert Geist, John P. Gormley, Miss Janet Haag, Frederick J. Haake, Mrs. George Hanson, Joseph L. Hassmer, David A. Hill, Fred K. Hoehler, Arthur L. Hossack, Pat Hoy, Norman H. Johnstone, Daniel Karlin, Miss Ola M. Kemp, Henry Kenny, Samuel C. Kincheloe, Robert H. King, Elmer W. Kneip, John S. Knight, C. A. Knuepfer, Edgar E. Koretz, Carl A. Kroch, William O. Kurtz, Jr., Leslie S. Larson, David L. Leeds, Miss Edna V. Liljedahl, Howard Linn, Jerrold Loebl, Harold Love, V. Reges Lynch, Roger McCormick, J. Dunlap McDevitt, Dr. Emerson K. McVey, Horace J. Mellum, J. Alfred Moran, K. P. Morgan, Robert C. Munnecke, William F. Naylor, Jr., Albert E. Neely, Gordon K. Palais, William J. Payes, Jr., Sherwood K. Platt, J. H. Price, Mrs. John A. Renn, George L. Rutherford, James S. Saleson, Dr. Louis Scheman, Dr. Edward L. Schrey, Bernard Snyder, John Stewart, James H. Stiggleman, George Van Gerpen, William F. Walthouse, Winfield C. Warman, Vernon M. Welsh

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays by advance request.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 4 P.M.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Botany:

From: Holly R. Bennett, Chicago—818 phanerogams; Dr. Chester S. Nielsen, Tallahassee, Fla.—132 algae; Dr. Camillo Sbarbaro, Spotorno (Savona), Italy—100 cryptogams, Italy; Dr. John W. Thieret, Chicago—202 wood specimens, 12 herbarium specimens, Illinois, Indiana, and Cuba

Department of Zoology:

From: Chicago Zoological Society, Brookfield, Ill.—birdskin, 2 bird skeletons; Robert J. Drake, El Cajon, Calif.—3 lots of Mexican land-shells, California and Mexico; Arthur M. Greenhall, Trinidad, B.W.I.—24 bats; University of Michigan, Ann Arbor, Mich.—collection of shells, western Pacific Ocean; Sidney Dealey Morris, Highland Park, Ill.—birdskin; Museum and Art Gallery, Durban, Natal, South Africa—8 birdskins; Naturhistoriska Riksmuseet, Stockholm, Sweden—collection of land-shells, Chile and Peru; Dr. George K. Reid, Jr., College Station, Tex.—7 fishes; Dr. Jeanne S. Schwengel, Scarsdale, N. Y.—collection of snail shells; Dr. Charles H. Seevers, Homewood, Ill.—22 Staphylinid beetles, United States and neotropics; Dr. Harald Sioli, Belem, Brazil—collection of inland shells, Lower Amazon basin; Dr. Henry Field, Coconut Grove, Fla.—collection of marine shells, Dubai, Persian Gulf; Mr. and Mrs. Richard B. Hoger, Westmont, Ill.—14 shore birds, Lake Calumet; Harry Hoogstraal, Cairo, Egypt, 110 fleas, 9 mite paratypes, 70 birds, Egypt, Turkey, and Yemen; Lederle Laboratories, New York—fruit bat, Honduras; Northwestern University Dental School, Chicago—15 dog skulls, 12 cat skulls, 2 sets of elephant teeth, 17 reptile skulls, 3 amphibian skulls; Dr. Charles D. Radford, Manchester, England—16 slides of parasitic mites; Prof. Hans Stübel, Erlangen, Germany—Uraniid moth, Madagascar; Lt. Col. Robert Traub, Washington, D.C.—3 slides of chigger mites, 30 fleas on slides, North Borneo, United States, Mexico, and Peru

Motion Picture Division:

From: American Airlines, Inc., New York—film "Flight over the Arctic"

The North American woods of most importance economically are exhibited in Charles F. Millspaugh Hall (Hall 26).

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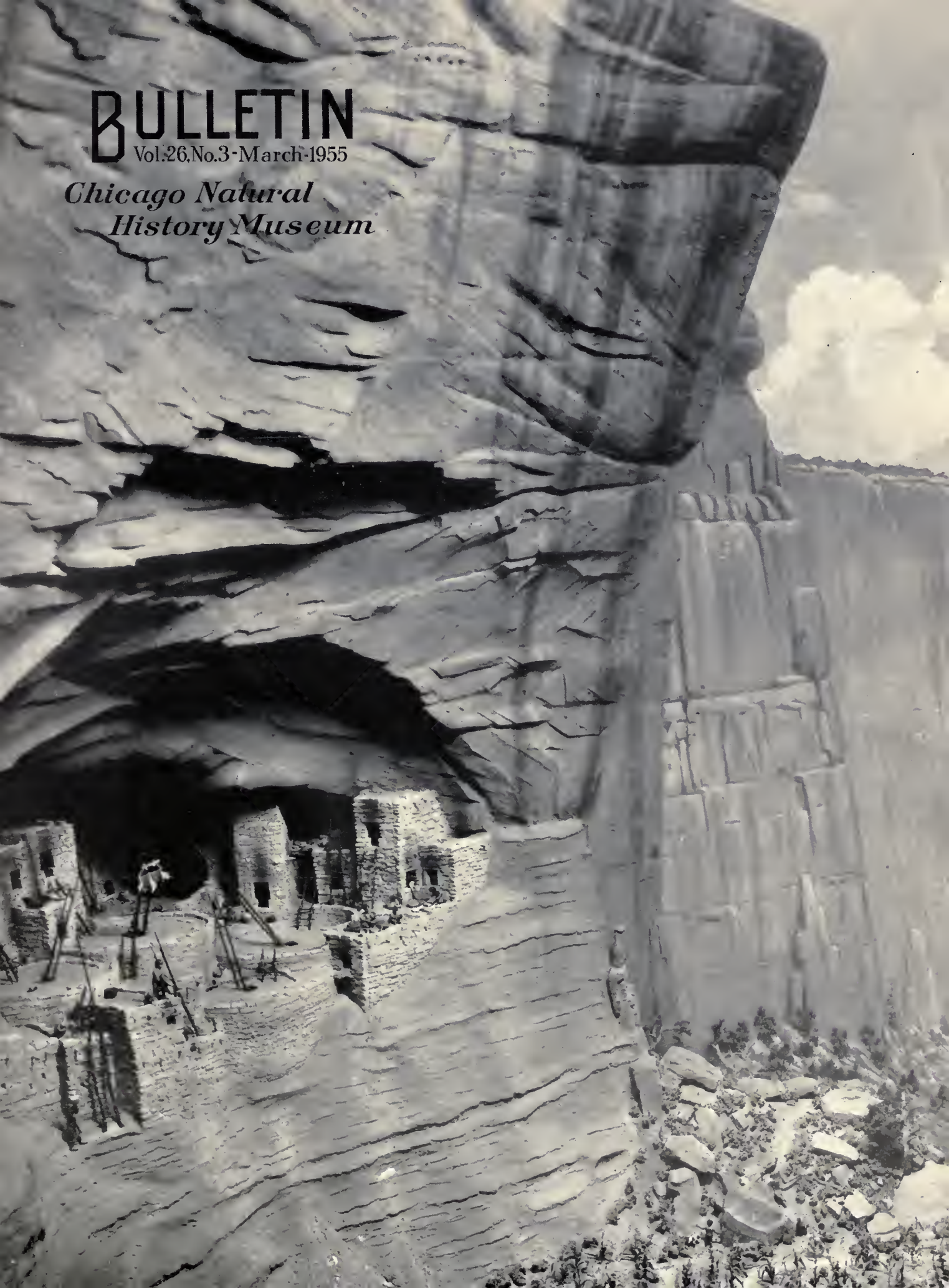
Chicago Natural History Museum



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Members are requested to inform the Museum promptly of changes of address.

PHRAGMOSIS: ANIMALS WITH BUILT-IN DOORS

BY KARL P. SCHMIDT
CHIEF CURATOR OF ZOOLOGY

IT IS A FEATURE of scientific literature that every branch of science tends to develop sets of special terms, and these may form a considerable barrier to the student who is trying to begin studies in some field and finds that he must rapidly acquire a whole new vocabulary. Coining new words or giving special meanings to old ones was so popular during the rise of the biological subscience, ecology, that it became a real drag on its development, as a glance at the 300-odd pages of Carpenter's *Ecological Glossary* of 1938 will demonstrate. Coining terms for ecological phenomena and principles has continued, including both the useful and the unnecessary types.

Carpenter's *Glossary* is focused primarily on the terminology of the earlier phases of ecology, mainly botanical. The necessary inclusion of the interaction of plants and animals leads to a further essential expansion of ecological terms. I have chosen one of the less known, *phragmosis*, for illustration of a relatively unknown word that has proved its usefulness and that covers a phenomenon of somewhat extraordinary nature, namely the adaptation by evolution of either the head or rear of an animal body as a device for closing the opening of a burrow in which it lives, or for merely closing the burrow behind the animal.

SIGNAL TO THE GUARD

Such closure of the opening of a burrow by an animal head is especially noteworthy in insects. In many species of ants the head of the soldier caste has been developed to close the openings of ant-burrows in wood. One of the most familiar examples is that of a common species of ant in Texas that lives in oak galls. In this species, the head of the soldier is sharply truncate and flat on its forward surface, and the openings into the gall are made so that the soldier's flat, round shields fit them exactly. The worker that desires exit must tap the soldier from behind with her antennae, whereupon he stands aside and lets her pass through. The entering worker palps the shield, and the living door opens and lets her in. Similar effective

CARRIES ITS BURROW DOOR

Pichiciego, smallest of all armadillos, has a vertical shield at the rear of its body that closes the path behind as it digs its way into the ground.

hole-closing devices are to be found in the heads of many species of ants, of wood-boring beetles and of termite soldiers. In spiders there are a number of forms with truncate abdomens, so that the vertical earth-burrow is effectively closed when the spider comes to rest, head-downward, in it.

Vertebrates, with their larger size-range, have given rise to a surprisingly large number of examples of hole closure by the body or parts of the body. Frogs that live in rock crevices or in knotholes in trees tend to close the hole by bending the neck so that the top of the head is at right angles to the axis of the body. When the head attains the level of a perfected hole-closing structure, as in various genera of frogs from Yucatan and West Mexico to Brazil, the skin of the head is found to have become bony, with sharp ridges and points. A small toad in Cuba lives in vertical burrows in the soil and closes the opening with its bony head. A group of burrowing snakes in southern India is referred to as shield-tailed, and it is suspected that the very large bony shield in which the tail ends, serves to close the burrow as the snake moves along. The end of the tail of one of the shield-tailed snakes even is the same diameter as its body and is sharply truncate.

Even more surprising, until related to the general phenomenon of phragmosis, are the structures of the small armadillo, the pichiciego of western Argentina.

The little pichiciego, the smallest of all armadillos, is less than six inches long from nose to tail-shield. It is a burrower, more extremely so even than the rest of the armadillo group, and has correspondingly reduced eyes, enlarged front claws, and, surprisingly in an armadillo, a thick coat of silky hair beneath its bony shield. Even more astonishing is the fact that it has a separate vertical shield at the rear end of its body, from which its ridiculous little tail projects, and that this rear shield is enlarged to the diameter of its body. The burrow of the pichiciego is closed at the rear at all times.

Phragmotic seems a formidable term to apply to a little creature so charming, but its scientific name *Chlamydophorus truncatus* is even longer. This means the "truncated mantle-bearer," the mantle referring to the body shield; *truncatus*, referring to the sharply vertical rear end, is thoroughly descriptive.

A mounted pichiciego (its common name means little blind armadillo) has long stood on my work table as a prized personal desk ornament. A French naturalist in Paris had offered it to the Museum, which had better specimens and so did not purchase it. As my colleague needed money more than armadillos, I purchased it from him myself in what was certainly a mutually advantageous bargain. My pichiciego serves to remind me of those extremes of adjustment that often illuminate the less-evident stages of the great process of orderly evolution in relation to habits and environment.

THIS MONTH'S COVER

Sites of archaeological interest will be covered in Dr. Alfred M. Bailey's films and lecture, "Arizona Through the Seasons," to be presented March 19 as the third program in the Museum's Spring Course of illustrated lectures on science and travel. Our cover shows a view of the Museum's own miniature diorama of one of the most important sites—the Mummy-Cave Village, a cliff-dwelling in Canyon del Muerto. The cave was occupied sporadically by Indians from about A.D. 350 to 1300, because it offered good shelter and was easily defended against enemies. Household objects and human burials or "mummies" have been well preserved in the cave because of its dryness. Drought and a military defeat drove the last inhabitants southwards from the cave, and they are believed to have joined their cousins, the Hopis.

ESKIMOS ACHIEVE A LIVELY ART IN FACE OF HANDICAPS

By JANE ROCKWELL

IN THE TUNDRA and along the rugged coast of the Canadian Arctic where materials and cultural advantages as we know them are sparse, a lively contemporary art exists among the Eskimos. Their creations have been judged unique and meaningful wherever they have been exhibited.

A special exhibit of 60 pieces of sculpture by the Eskimos of northern Canada will be shown at the Museum March 4 to 28 in co-operation with the Department of Northern Affairs and National Resources of Canada. Accompanying the sculpture will be black-and-white photographs both of pieces of art not included in the exhibit and scenes of the country where the art was created.

Unfamiliar with such modern sculptor's tools as mallet and chisel, calipers and dividers, the Eskimo must rely on tools used in everyday life to fashion his works of art. Today steel tools fitted in handles of bone, antler, or ivory have replaced the flint-like stones and slate used in the past, and modern tools are used whenever possible.

The limited materials available caused the Canadian Eskimos to turn to stones and ivory for their art media, and the semi-nomadic character of their people necessitated fashioning only small pieces of sculpture since tribes could not be burdened with large, heavy pieces during their frequent moves from place to place. The transitory nature of their culture also developed in its people a keen sense of observation in which essential detail and mastery of form and motion are stressed.

RESEMBLES MODERN ART

Eskimo art, identifiable as primitive, bears a striking resemblance to modern art forms in its simplicity of design and emphasis on only the essential characteristics of the subject. While simplicity of design in modern art usually is a product of an intellectual choice, simplicity in this primitive art is conditioned by the limitations of Eskimo culture. The carver is intimately acquainted with the subjects he portrays—the hunter stalking the polar bear, the owl guarding its nest, the mother holding her child—the everyday incidents which make up his basic cultural pattern. His conception of the universe causes him to attribute to things, living or dead, the emotions and even the speech of human beings. In his art, as in his conversations with companions, the Eskimo brings to light his human-like interpretation of animals and objects.

Small carvings found in ancient Eskimo villages are known to have had magical significance to their inhabitants—which is in keeping with the primitive concept that making a likeness of anything helps to materialize it. Primitive man, since early times, has painted, drawn, or modeled images of the animals on which he and his tribesmen depend for food. Carvings—replicas of such possessions of deceased persons as sleds, kayaks, or harpoons—have been placed on Eskimo graves because the originals were too valuable to be lavished on the dead. Whether this custom is a remnant of a now-forgotten Asiatic culture or merely pure love of craftsmanship, the art of the Eskimo is unpretentious and without any trace of self-consciousness. Even after a century of exposure to European culture, Eskimo art remains original, creative, and virile.

RIFLEMAN
"Modernistic" conception in stone by an Eskimo sculptor

Eskimo art is not limited to sculpture alone. Few women are interested in carving as an art form, but they are responsible for highly original designs on clothing, baskets and the artistic skin pictures which are stitched on bags and other articles. Like the men, women rely completely on memory of form and visualize their design in its entirety before making their sealskin cutouts and superimposing them on a white background. Quality and design in clothing are yardsticks for establishing respect among the Eskimos themselves, so the women do not take their craft lightly.

LITTLE MISS OF THE NORTH
An Eskimo artist's creation in stone

Eskimo custom forbids any show of pride on the part of the artist and dictates that the individual should malign his own work as useless and unworthy to be attempted again. Consequently, it is impossible to find any two pieces of Eskimo art alike in form, movement, or concept. Another curious convention provides that when a swimming animal is depicted, only the part visible above the water is shown. Carvings are cut off by means of a horizontal plane representing the surface of the water.

Carvings, decoration of skins, drawings on antlers and horns—all are art forms most familiar to the outside world. Singing, dancing, the poetry of the Eskimo legend or song, although they are equally a part of the culture, are less known since they can be translated only with great difficulty in an alien land with an alien tongue. As for the objectives of the Eskimo artist, there is no written record accompanying his work and the artist seldom gives utterance to abstract thought. We do know that his art is a personal thing, not created for commercial ends. Forced to spend much of his time in his home because of the severe climate, the Eskimo must provide his own amusement. An individualist who has never allowed himself time for warfare, the industrious Eskimo in his idle hours has ample time to contemplate and perfect his art.

The Museum has a permanent exhibit, entitled Ethnology of Eskimos of Alaska, Canada, Siberia, and Greenland, in Joseph Nash Field Hall (Hall 10).

11,500 Girl Scouts Aided

In slightly more than two years, more than 11,500 Girl Scouts of Chicago and vicinity have participated in special programs arranged by the Museum to assist them in the accomplishment of their various objectives, with special emphasis on helping them to qualify for proficiency in nature study. The period ran from October, 1952 through November, 1954. In all, more than sixty programs were conducted. Further programs of the kind, operated as before through the co-operation of the staff of the James Nelson and Anna Louise Raymond Foundation, began in February. The sessions, which will continue in March and April, are held on Saturday mornings.

BIRD NAMES FOR HOTELS

By AUSTIN L. RAND
CURATOR OF BIRDS

IN A CURIOUS ARTICLE, entitled "The Ornithology of Inn Signs," Dr. W. B. Alexander* discusses the names of birds applied to hotels and inns in England. He has a list of over 1,000 establishments with such names, but there are far less than 1,000 different birds involved. The swan, for instance, has lent its name to nearly 400 establishments. When there are more than one of these hostelries in a town they are sometimes differentiated, as in Bedford where there is a *Swan-by-the-River*, and a *Swan-by-the-Station*, and in York there is a *Swan*, a *White Swan*, an *Old White Swan*, a *Black Swan*, and a *Cygnet*. The total list numbers about 65 different birds, starting with the most frequent *Swan*, *Cock*, and *Eagle*, and running through such names as *Magpie*, *Partridge*, *Pelican*, *Parrot*, *Lark*, and *Rook*, to *Yutick* (*Winechat*), the least used.

When Dr. Alexander's pamphlet came to my desk I naturally thought, "How about in America?" I've traveled considerably in this country, but bird names are few in my memory. There's a *Pelican Cottage* in Florida, and a *Kingfisher Cottage*, too, among motels; in Greencastle, Indiana, there's a *Fluttering Duck;* near Chicago I know of a *Blue Bird Inn*, a *Cardinal Motel*, and somewhere there's a *Flamingo Motor Court*. Near Madison there's a place called the *Peacock*. *Blackhawk* is used commonly in the Illinois-Wisconsin area but comes from the bird only second-hand, by way of the Indian chieftain after whom the Blackhawk Wars were named.

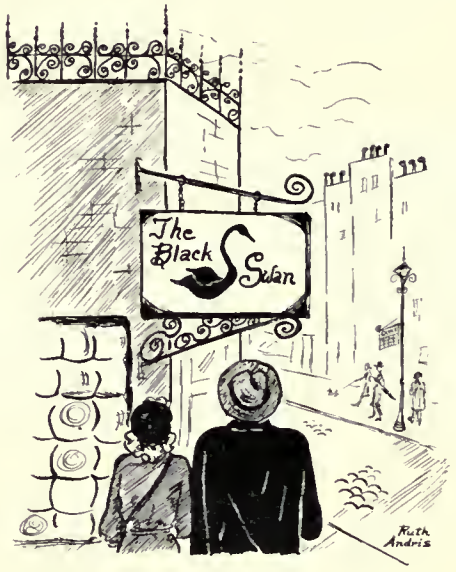
A *Turkey Inn* and a place labeled *Chicken Dinner* I hesitated to include. They have an air of impermanency and when next I pass I wouldn't be surprised to see them flaunting such slogans as *Flounder Inn*, *Irish Stew*, *Cold Plate Inn*, or *Giant Cheeseburger*.

TWO IN CHICAGO

I thought that perhaps my memory was faulty so I turned to the Chicago classified telephone directory. In the whole of Chicago there were only two hotels with names of birds. These were a *Sheldrake* (I did not count the *Drake*, always having associated this hotel, at the entrance to the Gold Coast, with Sir Francis rather than with a male duck, until on inquiry I found it is actually named after a Chicago family), and a *Flamingo-on-the-Lake* (evidently there should be another Flamingo, by the station or back of the yards, but it didn't appear.

I thought: perhaps only rural England has such rustic names as those of birds for their hotels—urban areas might be different; how would London compare with Chicago? Then I had a piece of luck. Miss Ruth Johnson, who draws the cartoons for this series and who has just become Mrs. William Andris, was making a trip to Europe to celebrate the event. She said she'd be in London and would investigate.

While in London she looked up the hotel, inn, and tavern names in the telephone directory. She brought back a list of about 190 such institutions in London named after birds. As one would guess, the swan headed



the list. It had given its name to 79 hostelries, including the *Swan*, *Ye Swan*, *White Swan*, *Old Swan*, *Old White Swan*, *Ye Olde White Swan*, *Swan with Two Necks*, *Black Swan*, *etc.* The prevalence of the name swan, Dr. Alexander suggests, may be correlated with a number of things: for waterside inns it may refer to the presence of the birds themselves; there is a labored implication, said to have been stated on a Dutch signboard, that swan is a popular name for an alehouse because the bird is so fond of liquid; it may be heraldic in origin, the whiteness of the swan having been a symbol of purity and of knighthood and once a badge of nobles and royalty; or perhaps it was favored because the outline of a swan, painted on an inn sign, was so easily recognized, a matter of more importance in an earlier day when few could read.

Eagle used in one form or another for 33 inns probably also correlates with heraldry (except for two *Eagle and Child*, evidently tied in with the old belief that eagles carry away children), and cock (29 times, with *Hen* appearing only once, and then as *Hen and Chickens*) were the next most common. Then through such names as penguin (which is an addition to Alexander's list), nightingale, raven, magpie, pigeon, parrot and owl to total 18 birds that have thus lent their names. There were birds in three's a number of times: *Three Magpies*, *Three Cranes*, *Three Pigeons* which could be related to heraldry, but there were also two *Two Eagles*, and one *Four Swans*.

The *Pelican* perhaps is based on the mediaeval association of the bird with Christian piety, and as a badge the bird was then shown with its nest and young. This, it is said, is the origin of the *Hen and Chickens*, rather than the domestic fowl that supplied the common *Cock*. One wonders about the *Peahen;* perhaps it's a ladies' hotel, though various "Peacock Alleys" I've known were recognized as places in which ladies displayed their finery. The *Bird in Hand* probably refers to falconry and not the proverb, judging by other pictured inn signs; the *Dog and Partridge* (another addition to Alexander's list) evidently is a resort of sportsmen, and the *Fox and Geese* perhaps refers to a game of that name played there.

Chicago has two inns named after birds. London has 190. Evidently a difference exists. There is geographical variation in the use of bird names for hotels and inns. But this is also true in England, where Alexander found bird names common only in the Anglo-Saxon areas, not in the Celtic areas.

Not only bird names are scarce, in my experience, in America, but there are also few hotels named after mammals: there are few, if any, bears, bulls, cats, cows, horses, etc. such as are common in England.

But in my cursory investigation I find plant names, especially tree names, very common: birches, maples, elms, oaks, pines, and spruces, in various numbers.

* Dr. Alexander is associated with the Edward Grey Institute of Field Ornithology, Oxford, England.

Spring Visiting Hours Begin

Visiting hours from 9 A.M. to 5 P.M. will go into effect at the Museum from March 1 through April 30, an extension of one hour beyond the 4 o'clock closing time observed during the winter months.

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Botany, Vol. 29, No. 1. *Revision of the Genus Cheirodendron Nutt. Ex Seem. for the Hawaiian Islands.* By Earl Edward Sherff. November 11, 1954. 45 pages. 75c.

Fieldiana: Anthropology, Vol. 44, No. 1. *Proto-Lima, a Middle Period Culture of Peru.* By A. L. Kroeber. *Appendix: Cloths.* By Dwight T. Wallace. December 15, 1954. 157 pages, 94 illustrations. $4.

Fieldiana: Zoology, Vol. 34, No. 28. *Some Mites of Yemen, Collected by the Medical Mission of the United States Naval Medical Research Unit No. 3.* By Charles D. Radford. December 23, 1954. 19 pages, 13 illustrations. 45c.

Fieldiana: Zoology, Vol. 34, No. 29. *A New Larval Mite from Eritrea (Acarina: Trombiculidate).* By Charles D. Radford. December 23, 1954. 4 pages, 4 illustrations. 10c.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

MARLIN PERKINS' ZOOPARADE. By Marlin Perkins. Rand McNally and Company. 96 pages, illustrated. $2.95.

It is not often that the advance publicity for a book begins many years before it is written, but that is certainly the case with Marlin Perkins' *Zooparade*. His success with a television program under that name has given Mr. Perkins a nation-wide reputation, and it is fortunate that his host of listeners can now extend their acquaintance with him. He may not realize how much of himself is projected over the television network or how much his personality, infused by his sympathetic love of animals, is reflected in the pages of his book.

The colored illustrations of *Zooparade*, by the well-known American animal-artist Paul Branson, are pleasing and appropriate. The marginal drawings in black and white are a feature of the book, performing the double function of decoration and illustration of the text. The young Chicago artist, Seymour Fleishman, is to be congratulated for his life-like drawings. Maps show the distribution of notable types of animals.

As an animal book for children, *Zooparade* can stand on its own merits, whether one has seen the famous television program or not. It is not only a pleasing book for children to read, but it is one that parents can read to children with pleasure.

KARL P. SCHMIDT
Chief Curator of Zoology

STAFF NOTES

Colonel Clifford C. Gregg, Director, was principal speaker at the annual meeting of the Cincinnati Museum of Natural History, held January 28. His topic was "The Place of the Museum in Its Community." . . . **Dr. B. E. Dahlgren**, Curator Emeritus of Botany, has left for Cuba to continue research on palms in which he has been engaged for years . . . . **Dr. Theodor Just**, Chief Curator of Botany, has been appointed a member of the Committee on Systematic Biology of the National Science Foundation, Washington, D.C. . . . **Loren P. Woods**, Curator of Fishes, who left on an expedition to Mexico toward the close of 1954, has proceeded from his first base at Salina Cruz on the Pacific side of the Isthmus of Tehuantepec, to a second center at Acapulco. He reports successful collecting in tide-pools in that Pacific coast area. The collections made at Salina Cruz have already been received at the Museum . . . . **Dr. Donald Collier**, Curator of South American Archaeology and Ethnology, recently conducted a seminar on "Research in Archaeology" at the University of Chicago . . . **Dr. John B. Rinaldo**, Assistant Curator of Archaeology, was consultant on archaeology for the "Career Day" recently held for students at Lyons Township High School . . . . **Miss Phyllis M. Brady** has been appointed Secretary of the Department of Geology. She attended Culver-Stockton College, Northwestern University, and the latter's Gregg College for Secretaries. She was formerly employed in a Chicago advertising firm.

NEW MEMBERS

(January 17 to February 14)

Contributors

Dr. Robert L. Fleming, Evett D. Hester, Arthur L. McElhose*, Ellen Thorne Smith

Associate Members

Guy T. Avery, John R. Doolittle, Harold Meidell, George B. Whitfield

Annual Members

Mrs. Cecil Barnes, V. R. Belden, Dr. George W. Birch, Robert Blumenfeld, Milton M. Blumenthal, Robert E. Bodman, Sidney L. Boyar, William N. Brock, Robert Livingston Childs, Mrs. Ross Coles, Lynn C. Farber, Joseph F. Fasano, William E. Fisher, W. J. Foell, John Jay Fox, Jr., John J. Gearen, W. P. Gilbert, Frank B. Gilmer, David Bruce Glade, Norman Glickman, Robert V. Gottschall, John L. Hall, Robert I. Harwood, Dr. V. O. Hasek, Frederick Charles Hecht, Mrs. Marion Hilker, Dr. A. A. Hilkevitch, Dr. Benjamin H. Hilkevitch, Charles W. Hill, Dormand S. Hill, Clarence W. Hines, Joseph Humm, John S. Hutchins, George R. Jones, Otto Kerner, Robert A. Kroeschell, Mrs. Roy Kroeschell, F. H. Kullman, Jr., George H. Kurtz, Seymour J. Kurtz, Montgomery Le Goff, Al Lerner, William Bross Lloyd, Jr., Dr. J. S. Love, Jr., Dr. Samuel S. Lyon, Dr. S. Allen Mackler, Fred J. Mangler, Charles V. Martin, V. F. Mashek, Jr., Joseph A. Matter, Fred W. McCloska, Mrs. Walker G. McLaury, George Merker, David C. Mervis, Carl A. Metz, Lloyd D. Miller, Frank W. Moran, C. Robert O'Boyle, George W. Overton, Jr., Stewart T. Peck, Thomas C. Quackenboss, Dr. John M. Reichert, J. Stuart Rotchford, Joseph A. Roseman, Jr., Dean Rotenberry, Dr. Ricardo E. Saldivar, Bruce M. Smith, F. L. Spreyer, John Paul Stevens, Frederick B. Stocker, Jr., Eugene T. Sullivan, John B. Van Duzer, John T. Vernon, Frederick A. Warde, George W. Weatherby, Louis J. Weiss

* Deceased

An interesting series of paintings contrasting modern whaling methods with those of the days of Moby Dick may be seen in Hall N-1.

Movies and Puppet Show . . .

CHILDREN'S PROGRAMS BEGIN MARCH 5

Eight movie programs and a stage presentation of a puppet show are offered free of charge for children in the annual spring series of entertainments to be presented at the Museum on Saturday mornings during March and April by the James Nelson and Anna Louise Raymond Foundation. As additional features on two programs, the explorers who made the films—Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History, and Robert Davis—will be present to tell the stories of the people, animals, and plants shown. Likewise, Basil Milovsoroff will come from the Folktale Puppet Studio at Norwich, Vermont, to stage personally the showing of the puppets which he creates.

All of the programs will be given in the James Simpson Theatre of the Museum at 10:30 A.M. Children are welcome either alone, accompanied by parents or other adults, or in groups from schools, clubs and other centers. Following are the dates and subjects of the programs:

March 5—DRUMS FOR A HOLIDAY
Color picture of the life of forest people on Africa's west coast

March 12—CHINA—LAND OF THE DRAGON
Typical life ways before the changes of recent years
Also a cartoon

March 19—ARIZONA THROUGH THE SEASONS
Animals and plants of an arid region
Story by Alfred M. Bailey

March 26—ICELAND—CAPRI OF THE NORTH
How a hardy people lives; featuring an exciting whale hunt
Story by Robert Davis

April 2—SOME FAVORITE ANIMALS
Creatures of both the wilds and the farm
Also a cartoon

April 9—EL NAVAJO
Nomadic Indians of the Southwest
Also a cartoon

April 16—THE CARNIVAL OF INSECTS
THE FISHERMAN AND HIS WIFE
Two puppet plays, presented by Basil Milovsoroff

April 23—PEOPLE ALONG THE MISSISSIPPI RIVER
The fabled stream of Tom Sawyer's and Huckleberry Finn's adventures
Also a cartoon

April 30—BEAVER VALLEY
One of Walt Disney's "True-Life Adventure" films
Also a cartoon

WINNERS OF NATURE PHOTO CONTEST HONORS

Photography enthusiasts, whether they're in the professional or "shutter-bug" category, have been multiplying at a great rate during the past few years. With this astounding growth has come more and more specialization as camera fans have concentrated on one phase or another of photography. One of the largest and most popular fields of specialization is nature photography, and few branches produce pictures of as much interest to the average viewer.

DIMPLES

By Yu-chiu Cheung, of Hong Kong. Awarded silver medal first prize in Animal-Life Section of Nature Photography Exhibition.

Each year during the past decade, the steady growth of this form of camera wizardry has been emphasized by the Chicago International Nature Photography Exhibition held under the joint auspices of the Museum and the Nature Camera Club of Chicago. Each of the ten shows held has surpassed its predecessors, not only in number of persons competing and number of photographs entered, but also in quality of the entries which come from all parts of the world.

DEATH VALLEY DUNES

By Gertrude Pool, of Palo Alto, California. Awarded silver medal first prize in General Section of Nature Photography Exhibition.

This year's exhibit, the tenth, drew a total of 3,739 entries from which 788 color transparencies and 241 black-and-white prints were selected for exhibition. Displayed last month in Stanley Field Hall of the Museum, the exhibit was the largest of its kind held anywhere.

Six persons won silver medals for their photographs which placed first in the animal, plant and general sections of the show's two divisions—color slides and black-and-white prints. Eighty-eight honorable mentions were awarded, 16 of them to residents of Chicago and vicinity. Following are lists of persons receiving medals and honorable mention awards in the two divisions:

MEDAL WINNERS

Prints:

ANIMAL-LIFE SECTION: Yu-chu Cheung, Hong Kong, China—*Dimples*

PLANT-LIFE SECTION: G. H. Wagner, Omaha—*Pua Leilani*

GENERAL SECTION: Gertrude Pool, Palo Alto, Calif. —*Death Valley Dunes*

Color Slides:

ANIMAL-LIFE SECTION: Rev. J. R. Swain, Middletown, Conn.—*Wood Thrush at Nest with Young.*

PUA LEILANI

By G. H. Wagner, of Omaha, Nebraska. Awarded silver medal first prize in Plant-Life Section of Nature Photography Exhibition.

PLANT-LIFE SECTION: Katherine M. McGregor, Toronto, Canada—*Twisted-stalk Pattern.*

GENERAL SECTION: Elizabeth S. French, Los Angeles —*Sand Magic*

HONORABLE MENTIONS

Prints and Color Slides, All Sections

CHICAGO AREA

Herbert J. Bassman, J. H. Boulet, Jr., Louise K. Broman, Mrs. M. Johnson Fuller, James Lee Kirkland, Grace H. Lanctot, Arthur W. Papke, Clara Schmitt, Myrtle R. Walgreen, Ruth Wood, Dr. Robert L. Fleming, Blanche Kolarik, Russel Kriete, Margaret Lewis, George M. Wood, Ted Farrington, and J. Musser Miller

OUTSIDE CHICAGO AREA

Barbara Haasch, Boise, Ida.; Grant M. Haist, Rochester, N.Y.; Lawrence G. Heinrich, Charlottesville, Va.; Wilfrede Jossy, Bend, Ore.; Mrs. Harold Kuhlman, Oklahoma City; Jacques Legare, Quebec, Canada; T. Middleton, Glossop, England; R. Menard, Paris, France; M. M. Deaderick, Carpenteria, Calif.; H. J. Ensenberger, Bloomington, Ill.; Bosworth Lemere, Carpenteria, Calif.; Jack Roche, Caldwell, N. J.; Jay Sanders, San Diego, Calif.; Anders Sten, Vika, Sweden; Lilla Deuel, Santa Barbara, Calif.; R. E. Egbert, Olympia, Wash.; George E. French, Los Angeles; Veronica Scheetz, Beverly Hills, Calif.; I. C. Barker, San Francisco; Alford W. Cooper, Worland, Wyo.

Ellen Cubitt, Toronto, Canada; W. L. Dennis, Decatur, Ill.; Roger W. Flagg, Pleasantville, N. Y.; Larry Fong, Pleasantville, N. Y.; F. C. Gebhardt, Erie, Pa.; H. W. Greenhood, Los Angeles; H. Haigh, Stamford, Canada; William H. Harlow, Syracuse, N. Y.; Harry G. Hoke, Stillwater, Okla.; Walter Jarvis, New York; R. O. Malcomson, Mt. Pleasant, Mich.; Katherine M. McGregor, Toronto, Canada; Dr. R. B. Pomeroy, Scarsdale, N. Y.; William D. Popejoy, Normal, Ill.; Robert W. L. Potts, San Francisco; C. W. Pugh, Toronto, Canada; Mrs. Irma Louise Rudd, Redondo Beach, Calif.; J. A. Russell, Sacramento, Calif.; Roy S. Town, Napa, Calif.; Leslie Tucker, Willowdale, Canada; Rudolph Zirngibl, Rochester, N. Y.; Gertrude Pool, Palo Alto, Calif.

H. Lewis Batts, Jr., Kalamazoo, Mich.; E. R. Degginger, Syracuse, N. Y.; F. G. Farrell, Cristobal, Canal Zone; R. M. Greer, Joy, Ill.; Wilfred Kimber, Monson, Mass.; L. J. Loomis, Endicott, N. Y.; Louis Quitt, Buffalo, N. Y.; Samuel Stern, New York; Morton Strauss, University Heights, Ohio; H. A. Thornhill, Merced, Calif.; John E. Walsh, Beverly, Mass.; Mrs. John E. Walsh, Beverly, Mass.; Tosi Giovanni, Modena, Italy; Carl Mansfield, Bloomingdale, Ohio

SPECIAL MEDALS FOR COLOR SLIDES

Awarded by the Photographic Society of America

Mrs. Blanche Kolarik, Chicago—*Fog Over Koke;* E. R. Degginger, Syracuse, N. Y.—*The Wood Nymph*

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: E. D. Hester, Jeffersonville, Ind. —134 pieces of ceramic recoveries, Philippine Islands; Mrs. Lily Zingarelli—a tweezer made of fiber, New Guinea

Department of Botany:

From: United States Department of Agriculture, Beltsville, Md.—5 samples of soybeans

Department of Geology:

From: Dr. Stajan Pavlovic, Belgrade, Yugoslavia—Chalcophanite mineral, Serbia; Clara A. Powell, Grand Rapids, Mich.—a group of Permian Age fossils, Oklahoma; Dominic Ramponi, Buhl, Minn.—6-pound lake Superior agate

Department of Zoology:

From: Chicago Zoological Society, Brookfield, Ill.—a siamang, Sumatra; Chicago Zoological Society, Brookfield, Ill.—a crocodile; Dr. Ralph E. Crabill, St. Louis—a paratype of a centipede *Geophilus ampyx* Crabill, South Carolina; Dr. Bryan P. Glass, Stillwater, Okla.—3 bats; Harry Hoogstraal, Cairo, Egypt—13 bird skins and 55 mammals; Dr. James N. Layne, Carbondale, Ill. —2 batflies and 2 beetles, Illinois and New York; Estate of Arthur L. McElhose, Arlington Heights, Ill.—collection of North American Lepidoptera; Museum of Comparative Zoology, Canbridge, Mass.—13 turtles, Iraq, Iran, Syria

SATURDAY TRAVEL FILMS AND LECTURES BEGIN THIS MONTH

EVERY SATURDAY AFTERNOON during March and April, Museum Members, their guests, and the general public will visit faraway lands of beauty, enchantment, and romance. Through the medium of color motion pictures, audiences in the Museum's James Simpson Theatre will accompany explorers and scientists who travel to all parts of the world on their picture-taking expeditions.

The Saturday visual jaunts will be held at 2:30 P.M. from March 5 through April 30. Nine lecturers will show films on Brazil, Florida, Arizona, Puerto Rico and the Virgin Islands, Hong Kong, the Pacific Coast, the Holy Lands, Mexico, and Australia. The annual spring course is presented under the provisions of the Edward E. Ayer Lecture Foundation Fund. Admission is restricted to adults because accommodations are limited, but special free motion picture programs for children will be held every Saturday morning during the same two months under the auspices of the James Nelson and Anna Louise Raymond Foundation.

Always a popular Museum event, the travel lectures offer knowledge and education in an exciting and entertaining form. Following is the schedule for this season's program:

March 5—Brazil

Eric Pavel

Brazil's oldest city, Bahia, with its palaces built on the first land discovered by the Portugese, and Rio de Janeiro, a city of modern buildings, beaches, and open-air markets, offer sharp contrasts to the Amazon jungle with its primitive Indian inhabitants who share their home with snakes, lizards, crocodiles, and birds. Cities and jungles both are shown in Brazil-born Eric Pavel's color film. A trip to busy São Paulo reveals the fastest-growing city in the world. Impressive also is another southern Brazilian city, Santos, the port of entry and exit for Brazil's richest area. After a look at coffee, sugar, and cotton plantations, the film provides views of the mining industry and of Iguassu, the largest and most spectacular waterfall in the world. Mr. Pavel is director of the Pan American Press and Film of Brazil.

March 12—Florida—Ponce de Leon's Fountain of Youth

Arthur C. Twomey

Familiar to Museum travel film audiences, Dr. Twomey, who is director of the Carnegie Institute's Division of Education, and Curator of Ornithology at Carnegie Museum, will present a panoramic view of Florida showing its diversified economic features and tourist attractions. Viewers will follow the route of Ponce de Leon's search for the Fountain of Youth in the land of Bimini as they penetrate the mysterious region of the Everglades with stopovers in the Keys, Florida Bay and other points of interest. Sound recordings made on the spot are added to heighten the film's realism. Florida as a modern fountain of youth—its marine studios, Sanibel Island, a shell collector's paradise, and many other landmarks will appear on Dr. Twomey's film.

RESERVED SEATS FOR MEMBERS

No tickets are necessary for admission to these lectures. A section of the Theatre is allocated to Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

March 19—Arizona Through the Seasons

Alfred M. Bailey

Arizona's year-'round spectacular scenic attractions and its special lure for the naturalist, are graphically shown by Dr. Bailey, former staff member of this Museum, who is now director of the Denver Museum of Natural History. The land of the Navajos, picturesque Monument Valley, El Capitan, the mesa-dwelling Hopis, the Petrified Forest, the great meteorite crater, Canyon Diablo, and the awe-inspiring Grand Canyon are only a few of the scenic spots included in the film. Arizona landscapes ablaze with wildflowers, the prehistoric ruins of Montezuma Castle and Tuzigoot, and many birds and animals native to this picturesque region, also are pictured.

March 26—Puerto Rico and the Virgin Islands

Robert Davis

Mr. Davis' travelogue begins with the ageless walls of San Juan, Puerto Rico, and continues to Charlotte Amalie in the Virgin Islands, illustrating throughout the blending of the Old World and the New. Harvesting of sugar cane and pineapples, breathtaking views of the mountain country, and "The Anvil," a 5,000-foot mountain covered with tropical rain forest, are shown. Of historical interest is the celebration of San Juan Bautista Day, held in honor of the patron saint of Puerto Rico, and the site of the oldest church under the United States flag, Porta Coeli, dating from 1511. A trip through the busy, narrow streets of Charlotte Amalie reflects its Danish influence.

April 2—Hong Kong, Bamboo Curtain Colony

Phil Walker

Former radio and television producer Phil Walker, who concentrates primarily on people in his films, depicts Hong Kong in terms of its teeming Chinese population. He shows interesting aspects of life in Victoria City, Kowloon, the Red China border town of Lowu, and the new territories. Viewers will make a luncheon visit aboard the floating restaurants of Aberdeen, see Red Chinese guards and a Communist ship unloading, the "water people"—sampan and junk dwellers of Aberdeen, and Hong Kong harbor. The film provides a peek through the Bamboo Curtain from this British crown colony.

April 9—Jewels of the Pacific Coast

Julian Gromer

Los Angeles, then north to Carmel-by-the-Sea, next, Monterrey, the Redwoods, San Francisco, a 30-mile trip up the Rogue River, views of Spirit Lake, Mount Rainier and the Seattle waterway—these are some of the highlights of the first reel of the film presented by world traveler Julian Gromer of Elgin, Illinois. Second reel in the program is the story of "Cheechako" (tenderfoot), recent winner of the Photographic Society's grand award for the best commercial film of the year. The cheechako, making a movie in the wilds of Alaska, learns the hard way and makes mistakes as his guide takes him through the snow-capped mountains, glaciers, salmon and trout streams, pine forests and mountain lakes, brown bear country, and impressive icebergs of Alaska. After consuming too much fresh salmon the cheechako dreams he is pursued by totem poles which have come to life.

April 16—The Holy Lands Today

Kenneth Richter

Kenneth Richter's years in Jordan, Syria and the Arab country while making a film for the State Department enabled him to photograph such ordinarily inaccessible places as the Dome of the Rock in Jerusalem —the most sacred place in the Islam faith after Mecca and Medina—while a religious service was in progress. Other highlights of the film include the tomb of John the Baptist, Crak des Chevaliers, the huge hilltop castle built by the Crusaders; and Baalbek, Byblos, Sidon, Damascus, and Palmyra where modern irrigation and oil pipelines are in strange contrast to a background of Biblical antiquity. Also shown are the fabulous bazaars of Aleppo, with closeups of interior scenes never before shown, the Arab legion, the Holy places of Jordan, a Bedouin sequence, and the Palestine refugee story—all filmed in a re-

(*Continued on page 8, column 3*)

ST. PATRICK'S CABBAGE VIES WITH SHAMROCK

BY THEODOR JUST
CHIEF CURATOR, DEPARTMENT OF BOTANY

NOW THAT SHAMROCK has lost its place in the official *Flora of the British Isles* (1952),* St. Patrick's Cabbage may belatedly come into its own. Native in twelve mountainous counties along the northwestern and southeastern coasts of Ireland, this little perennial plant grows abundantly among rocks in sun or shade on noncalcareous soils (calcifuge) and ascends to over 3,400 feet. It has a rosette of nearly round, spatulate, or oval leaves with toothed margins and petioles that are longer than their blades, leafless stems, and white flowers whose petals have from one to three yellow spots at the base and many crimson spots above. Far from being a real cabbage, it bears the scientific name *Saxifraga spathularis* and belongs to the saxifrage family (Saxifragaceae), many members of which are long time favorites in rock gardens. Its common name apparently refers to the fact that an early collector found it on Croagh Patrick (2,510 feet high) in County Mayo on the west coast of Ireland.

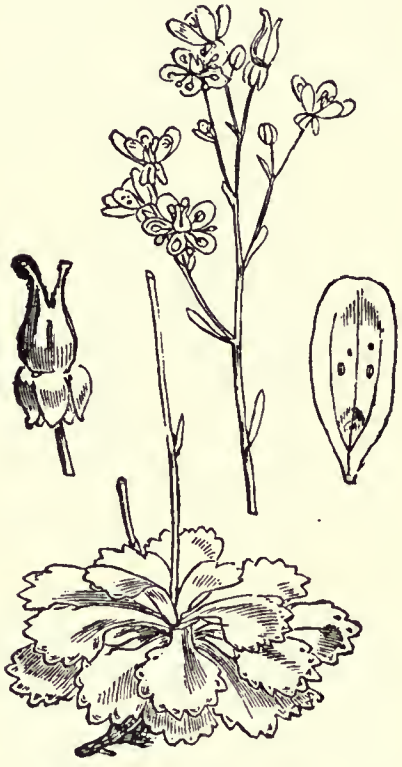
Its nearest relatives are *Saxifraga umbrosa* of the Pyrenees, introduced in Great Britain in 1792, and London Pride (*Saxifraga spathularis* x *umbrosa*), a hybrid of unknown origin but not known in the wild state, which is commonly cultivated in gardens and often escapes from there and becomes temporarily naturalized.

St. Patrick's Cabbage is indeed a plant of considerable interest. Being one of twelve species of plants definitely known to occur in Ireland but not in Great Britain, it belongs to a south European stock concentrated in northern Portugal and Spain. Unless these species were able to survive the glacial period somewhere in Ireland, these and other so-called Atlantic elements of southwestern Europe were probably the first and therefore the oldest immigrants after the glaciers receded. Thus these plants are surely older inhabitants and members of the Irish flora than the remainder, including the shamrock.

* . . . *as told in the following, reprinted from April, 1953 BULLETIN:*

A Shock For Erin

A tradition was shattered last month [March, 1953] on St. Patrick's Day when Dr. Theodor Just, the Museum's Chief Curator of Botany, called attention to the fact that there is no longer any such plant as a shamrock—at least, none recognized under that name by botanists. Various three-leaved plants that have been called shamrocks and used by millions of people each year for "the wearin' o' the green" are now officially designated only by other names. Dr. Just found that in the latest official flora of Great Britain and Ireland, published in 1952 and recently received at the Museum, the name shamrock is no longer applied to any plant—in fact, the word shamrock simply does not appear anywhere in the book. All the plant species of Great Britain and Ireland known to botanists are listed in the book which is the first new official flora of the British Isles to be published in more than twenty-five years. Earlier floras had used the word shamrock as an alternative name for several plants.



ST. PATRICK'S CABBAGE

A possible rival to the traditional shamrock, its scientific name is Saxifraga spathularis. Pistil on left; petal on right. Drawing from "Illustrations of the British Flora," by W. H. Fitch and W. G. Smith.

Audubon Screen-Tour to Show Land of the Mormons

"Mormonland" is the title of the fourth "screen-tour" offered by the Illinois Audubon Society in its current series. It will be presented at 2:30 P.M. on Sunday, April 3, in the James Simpson Theatre of the Museum. The color films will be accompanied by a lecture given by Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History. His films and narrative cover the state of Utah from Great Salt Lake to the Bear River marshes, and from desert to juniper country. The general public is invited, and admission is free. Members of the Illinois Audubon Society and Members of the Museum are entitled to two reserved seats, obtainable by presentation of their membership cards before 2:25 P.M.

SATURDAY AFTERNOON LECTURE SERIES

(*Continued from page 7*)

gion where three great world religions have their holy places.

April 23—Mexico
Willis Butler, Jr.

Mr. Butler and his wife traveled 4,000 miles to complete this color film which illustrates Mexico's variety of scenic wonders—both old and new. Included in the film are a trip through the floating gardens of Xochimilco, the story of the secret pottery art of the Tonala Indians, a visit to Guadalajara—Mexico's second city, and to Acapulco, beauty spot of the west coast, tile artistry in Puebla, Aztec dances in full costume, Mexican families at Spa Panafjel, newly-discovered art among ancient pyramids, the "new look" in Mexico City's architecture, a flower market, Mexico's Fourth of July, and scenes of the Mexican capital at night. Mr. Butler is a Northwestern University faculty member.

April 30—Highlights of Australia
Allen Keast

Two films, "Walkabout" and "Tjurunga," documenting the lives, habits, and traditions of a tribe of Australian aborigines, will be shown by Mr. Keast, Curator of Birds and Reptiles at the Australian Museum, during the first part of his program on Australia. A third film, "Coral Wonderland," shows coral growths and other sea life viewed with an underwater camera. Termed the "world's most primitive men," the aborigines in Mr. Keast's films are seen hunting, cooking a kangaroo, participating in ceremonials, and engaging in many other activities in their colorful desert environment. In "Coral Wonderland," brilliant fishes, marine worms, clams, the colorful nudibranch, sea anemones, and many others are photographed in their deep-sea home.

Expedition to Survey Volcanoes of Central America

In continuation of his research and collecting of specimens from important volcanoes, Dr. Sharat K. Roy, Chief Curator of Geology, is scheduled to begin in March an expedition that will start in El Salvador, and branch out into Nicaragua. If time permits, he will extend his activities into Guatemala and other parts of the Central American isthmus. Dr. Roy has been engaged in volcanological studies for several years past. He was the first person to climb the Izalco, most active of Central American volcanoes, and he has climbed all other major Salvadorean volcanoes. His undertakings in this field are expected to culminate in a more detailed report on the subject than has heretofore been made. A definitive monograph, to be published by the Museum, is planned.

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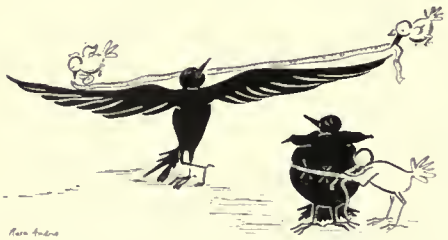
THE LARGEST BIRD

BY AUSTIN L. RAND
CURATOR OF BIRDS

WHAT is the largest of birds?

One must approach such a question as this with caution, straightforward as the question seems. First, do you mean weight or wing spread? These are the two usual



Size by wing spread . . .

criteria and they will give quite different results. In weight the ostrich-like flightless running birds head the list. But in wing spread the ostrich, with degenerate wings, ranks relatively low.

The second element to watch for is the reliability of the records. Somehow, certain records that seem impossibly large have become current and must be discarded. This is well illustrated by Dr. R. C. Murphy's comments in 1936 on wing spread of the albatross. Current authorities gave up to 17 feet as the wing spread of the wandering albatross (which is about the same size as the other "great" albatross, the royal). After sifting the evidence and giving his own measurements, he concludes that about 11½ feet represents the maximum expanse of any known bird.

In the following, a presentation of the average or normal is attempted for comparative purposes rather than an absolute "record."

VARIATION

The weight of a bird would obviously vary with age, sex, and the amount of fat the bird carried. In addition, the species may attain different sizes in different parts of its range. This is illustrated by the weights of the Canada geese, adapted from F. H. Kortright's book. Individual and sexual variation is shown by the large eastern subspecies, the common Canada goose: male, 8 pounds 2 ounces to 13 pounds 8 ounces (average, 9 pounds 3 ounces); female, 7 pounds 6 ounces to 13 pounds (average, 7 pounds 14 ounces). Variation correlated with geography (i.e. subspecies) is shown for males, average weight only, as follows:

Common Canada goose	9 pounds 3 ounces
Western Canada goose	10 pounds 4 ounces
Lesser Canada goose	5 pounds 2 ounces
Richardson's Canada goose	4 pounds 14 ounces
Cackling Canada goose	3 pounds 6 ounces

FLIGHTLESS BIRDS—WEIGHT

The ostrich is the largest living bird. When it stands up to look around, its head may be 8 feet from the ground and it may weigh 300 pounds. Ostriches' strength is such that as a stunt people ride on their backs. The ostrich's nearest rival is the emu of Australia that may weigh 100 pounds, and the cassowary of the New Guinea-

. . . or by mass and weight

Australia area is close behind, weighing up to 90 pounds. By comparison the ostrich-like rhea of South America is a pygmy, weighing only about 45 pounds.

That there were giants in earlier days may or may not be true of humans, but it's certainly true of birds. The moas of New Zealand and the Aepyornis of Madagascar are extinct, known only from bones, but from a study of these we find they were certainly much larger than the ostrich. We can never have actual weights, of course, but Dr. Dean Amadon, comparing their remains with the bones of ostriches, comes to the conclusion that moas may have reached a weight of 500 pounds and Aepyornis a weight of 1,000 pounds, the largest known bird of all time.

These flightless birds, of which the ostrich is the best-known type, are all long-legged running birds with degenerate wings that have no function in locomotion. Their wings are so small that they probably are of little use even as balancers. But another type of flightless bird also reaches a large size—the emperor penguin, which may attain a weight of 75 pounds. In the penguins the wings, though reduced, are modified into flippers and still function in locomotion—in swimming—rather than the short, comparatively small feet.

Though the largest birds are flightless, not all flightless birds are large. The kiwi of New Zealand and the smaller species of penguins could probably be matched for weight amongst domestic fowls. There are some flightless rails, such as the one from Tristan da Cunha, that are little larger than sparrows.

FLYING BIRDS—WING SPAN

The largest flying birds are probably the wandering and the royal albatross, with a wing spread of about 11½ feet and a weight

(*Continued on page 5, column 3*)

THIS MONTH'S COVER

Recently volcanoes have rivaled politics, the cold war, and atomic developments for front-page attention. The latest eruption, near Mauna Loa in Hawaii, brought a demand for information on volcanoes, in response to which Dr. Sharat K. Roy, Chief Curator of Geology, prepared the article on page 3. Our cover picture shows the devastating effects of volcanic eruptions of explosive type. The havoc shown was wrought by the eruption of the Mexican volcano, Parícutin, most recent of all volcanoes of steam-blast type. Much of the lava-flows that engulfed the village in foreground of the photograph came from one of the vents in the flank of the volcanic cone.

VOLCANOES AID IN PROBING SECRETS OF INNER EARTH

By SHARAT K. ROY
CHIEF CURATOR, DEPARTMENT OF GEOLOGY

Dr. Roy left in March to make collections of volcanic specimens and continue his studies of volcanoes in El Salvador, Costa Rica, and Nicaragua. The expedition is a continuance of research of the past several years.

RECENT LAVA ERUPTIONS associated with the volcano Mauna Loa in Hawaii have once again brought the subject of volcanism sharply into focus. There does not seem to be any lessening of interest in Nature's pyrotechnics.

From the standpoint of volume, Mauna Loa is the world's largest volcano. At 13,686 feet, it is nearly as high as Mauna Kea (13,835 feet), which is the world's highest mountain if measured from the ocean floor. Of Mauna Kea's total height, 31,750 feet (almost half a mile higher than Mount Everest), fully 17,915 feet is under the sea.

The islands of the Hawaiian group, the largest of which is Hawaii, are but the summits of an enormous submarine volcanic ridge. The material composing the ridge consists almost entirely of basaltic lava that has risen intermittently along a fissure on the ocean floor from an average depth of 18,000 feet. Although Mauna Loa is often referred to as the "monarch of modern volcanoes," it is not of the explosive type, nor are its sister volcanoes, Mauna Kea, Kilauea, and other lesser ones.

"QUIET ERUPTIONS"

The eruptive activities of the Hawaiian volcanoes are confined almost entirely to quiet lava-flows from the cracks in the flanks of the cones or from those at the base of the cones and in the surrounding areas. For this reason the terms "Hawaiian eruption" and "quiet eruption" are used synonymously in geologic literature. The characteristic feature of the Hawaiian eruption is that, preceding an eruption, the lava accumulates in the crater, but before it can rise to the summit and well out, its weight ruptures the walls of the crater. With pressure thus relieved, fountains of incandescent lava leap into the air and fall to form a river of fire, which, when very hot, is known to have moved faster than a man can run, ten to twelve miles an hour. The principal characteristic of Hawaiian lava, which is basaltic, is its fluidity. It is not to be construed that the eruptive behavior of a given type of volcano is always the same. On the contrary, volcanoes are notoriously fickle; the same volcano may and does change from one type to another. In historic times, two disastrous explosive eruptions have taken place in the Hawaiian Islands, and that there will be many more in time to come is almost a certainty.

In direct contrast to the Hawaiian volcanoes are the volcanoes of the Mexican Cordillera, Central America, and the East Indies. In these areas the earth breathes fire and the volcanoes erupt murder. With but a few exceptions these are all viciously explosive volcanoes. Hundreds of catastrophic explosions with successions of earthquakes have killed thousands of people, wiped out great cities, dammed and deflected streams, cut off water supplies, and blocked highways to which survivors fled to escape to safer grounds. Man's memory refuses to recall or relive the death and destruction that accompany violent explosions. In the Messina Straits in 1908 more than 200,000 lives were snuffed out by a single explosion.

CONTINUOUS ERUPTION SINCE 1770

Volcan Izalco in El Salvador, the most active of all Central American volcanoes. It has been erupting almost continuously for more than 184 years.

PACIFIC OCEAN VOLCANO BELT

Fortunately for humanity, the periods of volcanic quiescence far exceed those of violence. If this were not the case, millions of people now inhabiting areas along the "belts of fire" would be forced to abandon their lands made fertile by the decomposition of volcanic ash and migrate inland to start life anew amidst uncertainties and in communities less to their liking. This mass dislocation would be particularly severe in the vast belt around the Pacific Ocean—a belt that begins in Tierra del Fuego and extends through the Andes, Central America, Mexico, and Alaska to the coast of Asia and southward through Japan, the Philippines, East Indies, and New Zealand.

What governs the type and/or character of an eruption? It has been stated that the eruptive element *par excellence* is gas—that the gas is the active agent and that magma or lava is its vehicle. Indeed, eruptions are actuated by lava charged with gas and steam in a fissure underground. Since the gases differ in their proportions and the lavas in their constituents, we have either quiet lava-flows or steam-blast explosions. As a rule, quiet eruptions are associated with the extrusion of basic lavas, which, being more fluid than acidic lavas, permit the imprisoned gases to escape more freely into the air. The acid lavas, on the other hand, are stiff and viscous. They congeal rapidly in the vents, impede the passage of steam and other gases that accumulate in large quantities, and build up a condition for an explosion of immense violence.

HEAT SOURCES

The ultimate cause of volcanic eruptions is heat. Where does the heat come from? If it is a part of the original heat of a once very hot earth it should be evenly distributed. Volcanoes, however, indicate that only certain areas become heated intermittently at certain times in geological history. As a matter of inquiry into whether the radioactivity of uranium and thorium is a source of heat in volcanic actions, volcanic ejecta—lavas, ashes, and the gases evolved from fumaroles—have been analyzed, but the amounts found in each case are too small to be significant. Other probable sources of heat, such as gravitational compression, faulting, and folding may be considered, but these too can hardly be expected to produce, individually or collectively, the magnitude of heat required. Perhaps it is well to assume that the development of high temperature in localized areas during volcanism results from the interactions of several heat sources rather than any one in particular.

Volcanoes offer some of the few means we have for probing into the enigmas of the Earth's turbulent interior. Mere understanding of the morphology and products of volcanoes is not enough. The time is now ripe for concentrated field studies at active volcanoes of their past history, structural setting, and relationship to neighboring volcanoes.

Volcanism has long ceased to be an abstruse science. Though much remains to be known, certain diagnostic criteria as signs of impending volcanic activity are fairly well established, and prediction as to the time and areas to be affected can be made in many cases. The certainties of physical law are behind all this and play a major role. The formula once determined can be applied to various types of volcanoes. We owe much to the volcanologists stationed in volcano observatories for the increasing body of information that gradually makes clearer the physics and chemistry of eruptions and earthquakes. Already the damage to life and property by timely predictions has been appreciably reduced.

FISH COLLECTING ALONG COASTS OF MEXICO

By LOREN P. WOODS
CURATOR OF FISHES

THE MEXICO Zoological Field Trip of 1954–55 left Chicago on last November 26 and returned on March 7. The principal objective was to collect marine fishes along the Pacific Coast of the Isthmus of Tehuantepec in southeastern Mexico and in the vicinity of Acapulco.

BEACH SEINE-FISHING IN MEXICO

At La Ventosa, a fishing village near Salina Cruz, all the men and boys work at hauling seines. Nets 20 feet deep and 100 to 300 yards long are loaded into dugout canoes and set to surround schools of fish in the bay.

The first base of operations was Salina Cruz, a busy but small seaport and Pacific terminus of the trans-isthmus railroad. Salina Cruz, though only of minor importance as a commercial fishing and shrimping port, was chosen because it is the most southern port from which shrimp boats operate and because the shrimping is carried on near a hypothetical zoogeographic boundary line as well as along the Mexico-Guatemala political boundary line.

The Gulf of Tehuantepec is a broad curving bight with east-west shore lying only 125 miles south of the southern shore of the Gulf of Mexico. During the winter months strong north winds spill out of the Gulf of Mexico, funnel across the low mountains of the isthmus, and blow with considerable force out into the Pacific. Winds of nearly gale strength are generally avoided by trawler fishermen who put out to sea in vessels of 50 to 65 feet in length, but in this region the winds are actually more help than hindrance. The large Pacific swells rolling into the shallow Gulf of Tehuantepec toss the trawlers a great deal, and this movement makes trawling and handling of gear very difficult. The effect of the winds is to blow the sea flat or at least to change huge swells to short chops, so that from shore to five or ten miles out the small boats ride on an even keel. The shrimping grounds are far to the east, sheltered from the strongest winds by high mountains but still in the area where the rollers have been flattened.

A few days after arriving in Salina Cruz, arrangements were made for me to make a twelve-day cruise aboard a shrimp boat as a guest of the shrimp company to collect the fish specimens I desired for study. Since shrimp nets capture a large variety and quantity of fishes, there was no difficulty in making the collection, and within a day or two one 25-gallon tank was already full. The second tank was gradually filled during the remaining ten days as additional species were caught. Shrimping in the Gulf of Tehuantepec is carried on day and night, the net being dragged for three hours, hauled, emptied, and immediately set for three more hours. This continues with monotonous regularity round the clock, day after day. Preserving specimens, sleeping, and eating are done while the net is out.

At this time of year the shrimp were living in comparatively shallow water of 12 to 20 fathoms and from one to five miles offshore. Every haul resulted in 500 to 2,000 pounds of fishes and miscellaneous invertebrates to be sorted from shrimp and fish specimens. Several kinds of sea catfishes and numerous species of drums made up the bulk of the catch, but there was also a great variety of grunts, flatfishes, sharks and rays, herrings, anchovies, and other miscellany. Altogether nearly a hundred different kinds of fishes were netted.

OTHER SALINA CRUZ FISHING

The shrimp-boat cruise ended December 24, and so Christmas morning was spent sorting and wrapping the specimens and packing them into the smallest possible space to make room for more. A beach seine-fishery at Salina Cruz produced additional species of fishes, and still other species were taken by fishing with a light at night and by treating tidepools with derris-root powder to drive the fishes from their holes and stun them so they could be caught. Fishing by the latter method was not very productive in number of individuals or species, presumably because the waves carried fine sand, resulting in clean-scoured rocks and very poor living conditions for reef fishes.

Along the Chiapas coast of Mexico, east and south of Salina Cruz, is a network of shallow mangrove-bordered lagoons. Some of these lagoons are fresh water, others are very salty during the dry season, while still others are merely brackish. They contain a good variety of fresh-water and marine fishes living together. There is usually a fishing village on the shore of each lagoon, and the villagers regard the lagoon as their private family fish-pond. One of the most interesting fishes living in the lagoons is the alligator gar, known locally as the *peje armada*. Gars had been reported from this area, but no specimens had ever been collected for study. No entire specimens were available because the fishermen remove the head and slit the fish as soon as it is speared. Later the fish are filleted, salted, and dried for the market. A three-day trip was made by land down the coast to the lagoon of Cabeza del Toro (the name derived from the shape of the lagoon) near Puerto Arista. Here the fishermen were induced to bring in three small gars without first removing the heads. The alligator gar is known to live in the Usumacinta River on the Gulf of Mexico side of the Isthmus of Tehuantepec and in Lake Nicaragua, as well as in the Mississippi River valley, gulf coast of the United States, and Cuba. Study of these specimens from the Pacific coastal lagoons may provide a clue concerning the route by which they reached their present isolated habitat.

COLLECTING NEAR ACAPULCO

After five weeks of gathering fishes in the vicinity of Salina Cruz, the collection was taken to Mexico City and sent to Chicago. This provided much needed space for additional specimens when the base of operations was shifted to Acapulco. Acapulco, a resort city, is sheltered by mountains from the effects of the strong winds that blow the warm surface-water away from the Gulf of

Tehuantepec, is easily accessible, and provides excellent facilities for shore collecting. In addition there are large bays, sheltered coves, and rocky islets with abundant tidepools and shallow submerged reefs inhabited by a number of small fishes of many varieties. These species, such as butterfly fishes, tangs, wrasses, and demoiselles that are usually associated with living coral and rocky reefs, were very scarce or absent from the sandy shores where we had been collecting earlier. Each particular locality around Acapulco Bay, where rotenone was used to stun the fish, yielded 40 to 50 species, and after three weeks of fishing a collection of between 100 and 150 species was gathered. Some beach and lagoon fishing is carried on by the local fishermen, and in addition another group of fishermen fish at night around the entrance of the bay with handlines, spear and dipnet, using a lantern to attract the fishes. Their catch added a number of species that were not caught by the methods I had been using.

During the past two years the Museum has received collections of fishes from Guaymas (Mexico), from the Gulf of Nicoya on the Pacific Coast of Costa Rica, from both coasts of Panama, and from the Gulf of Mexico and West Indian islands. It is especially helpful to have specimens of a particular species from various parts of its range for study and also useful to have comprehensive collections from various provinces in a particular zoogeographic region in order to delineate the boundaries and thus to understand some of the limiting factors and ecological preferences of certain species. There are a number of resemblances between the fish fauna of the eastern tropical Pacific and the West Indian fish fauna (including the Gulf of Mexico and Caribbean Sea shores)

SPOTTED PORCUPINE-FISH

Increasing its size by swallowing air was disastrous for the fairy-tale frog. The porcupine-fish, better fitted for this behavior, uses inflation as a natural protective device. Swallowing air or water not only changes the shape of the fish but assists in erecting its long hard spines. Other fishes seek less prickly, more appropriately shaped prey for food.

that need further study and explanation. It is hoped that careful study of the collections obtained by this expedition can be combined with data obtained from the collections mentioned above to add to our knowledge of the geographic distribution and variation problems of the American tropical marine fishes.

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays by advance request.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 5 P.M.

STAFF NOTES

Dr. Theodor Just, Chief Curator of Botany, told about some of the widespread fallacies concerning mushrooms in a recent guest-appearance on the television program "Women and the World" over station WBKB, illustrating his talk with Museum material. On March 17 he lectured on "Adventures with Plants" in the noontime series presented at the Chicago Public Library for audiences of Loop workers. . . . **Henry S. Dybas**, Associate Curator of Insects, represented both the Museum and the South Cook County Mosquito Abatement District at a meeting of the Illinois Mosquito Control Association held at the University of Illinois in Urbana. . . . **Miss Harriet Smith**, lecturer on the staff of Raymond Foundation, spoke on the mission of the Museum over radio station WNMP in Evanston, Illinois . . . **Colonel Clifford C. Gregg**, Director, recently told "The Inside Story of the Museum" for the Kiwanis Club of Gary, Indiana.

YOUTHFUL SCIENTISTS TO STAGE SHOW

Some of the Darwins, Newtons, and Einsteins of the future will have their day at Chicago Natural History Museum on April 16 at a science fair sponsored by the Chicago Teachers Science Foundation. Grade-school pupils (from the 6th grade up) and high-school students will display their achievements in the fields of biology (including conservation), geology, anthropology, mathematics, physics, and chemistry. The fair at the Museum is for those pupils enrolled in schools of the West Area, bounded by North Avenue, the Sanitary and Ship Canal, and 47th Street. (South Area exhibits go to the Museum of Science and Industry on April 2; the North Area display was held at the Chicago Academy of Sciences on March 26.)

The exhibits, all the creations of young people completed without aid other than advice from teachers, parents, or other adults, will be displayed on the second-floor gallery of the Museum at the head of the grand staircase. The students themselves will be present to explain and demonstrate their products. Theodore W. Wallschlaeger, principal of the Palmer Elementary School, will be in charge. Awards will be made in each grade, and winners may take part in later science exhibitions from all areas. An idea of the type of exhibits that may be expected is shown by last year's list, which included: a model of the human ear, six-inch telescope, Navaho Indian artifacts, model of an atomic pile, a miniature Stone-Age diorama, photo-electric circuit, mechanical model of the earth, a garden-collected exhibit of insects, butterflies of Chicagoland, "do-it-yourself" electronic devices, and classification of plants.

THE LARGEST BIRD

(Continued from page 2)

of 15 to 20 pounds. The next-largest flying birds are the Andean condor that must approach 10 feet in wing spread and the California condor that has a wing spread of about 9 feet and a weight of 20 pounds, according to C. Koford's studies.

Unlike the running ostrich-like birds, the largest fossil flying bird was only a little larger than present-day birds. The largest is *Teratornis*, a Pleistocene vulture of North America, which has been estimated to weigh 50 pounds, a truly enormous weight for a flying bird. We can't get its wing spread directly because we have no feathers of this fossil, but its bones, according to Dr. H. I. Fishers, show it to have a wing spread, in skeleton, of 7¼ feet, and the wing itself a length of about 39 inches compared with 31½ inches for the California condor and 34 inches compared with the Andean condor. If its quills were as long as those of the Andean condor, which it probably exceeded, a couple of feet would be added on each side of the 7¼-foot skeletal spread to give a wing spread of about 12 to 13 feet, slightly larger than that of the albatross.

Surprisingly, while the largest running birds were way in advance of any competition, this is not true of the largest flying birds. The trumpeter swan has a wing spread of 8 feet and a weight of 28 pounds; the white pelican a spread of 9 feet and weight of about 10½ pounds; and the whooping crane a spread of 7 feet and a weight of about 10½ pounds.

Not to isolate these figures, following are the wing spreads and weights of some of our more familiar birds:

	Wing spread	*Weight*
Bald eagle	79 inches	9.5 pounds
Great blue heron	70 inches	7 pounds
Turkey buzzard	70 inches	4.5 pounds
Red-tailed hawk	48 inches	3.25 pounds
Crow	36 inches	1.3 pounds
Sparrow hawk	21 inches	4 ounces
Robin	15 inches	2.5 ounces
Song sparrow	9 inches	.88 ounces

STUDENTS FIND SCIENCE IS NO SNAP JOB

By ROBIN D. ROTHMAN

An apprentice's view of the routine toil behind scientific endeavor is presented here by an Antioch College student employed temporarily at the Museum. Under a "co-op" system, students alternate periods of study on the Antioch campus with periods afield on jobs. Miss Rothman was assigned to the so-called "Mecca Project" (BULLETIN, November, 1954) involving fossiliferous black shale of Pennsylvania age quarried near Mecca, Indiana, by a Museum expedition. For several months staff paleontologists and their assistants have been splitting the shale and charting the position and orientation of all fossils to determine environmental relations.

A MUSEUM VISITOR in the exhibition halls may not be aware of how much more there is to the process of accumulating and presenting knowledge than is apparent in the public displays. When I was informed at Antioch College of my assignment to the Museum for a "geology opening that involved splitting shale," I anticipated a quiet atmosphere, the presence of geological specimens of all ages, and pleasant working associates. All of these expectations were realized, but the job was pervaded with a special kind of excitement not foreseen.

Upon my arrival from the college in Yellow Springs, Ohio, I was directed to the third floor of the Museum—a maze of hallways broken by doors that lead to offices and laboratories. Behind the walls of these rooms are concealed thousands of specimens of all descriptions seldom seen by any of the Museum's millions of visitors. I was escorted through these confusing corridors to a large room where I received my first and, at the time, dismaying view of "Mecca." The floor was almost entirely covered by enormous sheets of shale marked "Layer B." On tables, walls, and even the ceiling were charts, photographs, and odd mysterious symbols. The decor was completed by a few chairs, fluorescent lamps, and two instruments that were frequently to prove their essentiality—one a microscope, the other a broom.

TASK APPEARS FORMIDABLE

The initial shock of this cluttered and unprepossessing atmosphere was dispelled by the warm welcome of the group at work. I was presented with somebody's lab coat and directed to my place across a table from a fellow Antioch student, Shirley Hale. I was then shown specimens of common fossils and the symbols used to indicate them and introduced to the methodology of recording. Finally, I was handed an ordinary but extra-sharpened table knife and left to my still uncertain devices. It was rather disconcerting to learn that the entire floorful of shale must be split, block by block, into small pieces and each fossil identified and represented by its symbol upon a chart that is a scale reproduction of a large numbered slab.

After a few days in combat with a stubborn block of shale I began to acquire a limited vocabulary of the commoner fossils. For instance, leggy knobs turn out to be Petrodi, a form of skin-covering from a shark; a spiked, curved, and corrugated triangle is a Listracanthus or fish spine; other fish remnants are called Paleoniscoid. With a couple of weeks of practice in shale splitting, I mastered the technique of jabbing knives into the shale instead of myself and, with many questions and re-explanations, I learned to recognize a nearly complete range of fossils for a particular level. The reasons for the procedures employed and the gist of the conversation around me gradually became intelligible.

Then my attention was attracted to the characteristics of the scientists in charge of

Paleontological research in "Mecca Laboratory": Curators split shale with sharpened kitchen knives; student aides from Antioch College wield brooms for the advancement of science.

the project—Dr. Rainer Zangerl, Curator of Fossil Reptiles, and Dr. Eugene S. Richardson, Jr., Curator of Fossil Invertebrates. Both of these men work harder than anyone on the project, and they supervise the rest of us as well. It seemed to me that long months of concentrated shale-splitting would cool their ardor. I soon realized that their interest and enthusiasm are sustained not only because such labor and compiling of data will result in an ecological picture of the age and area in which the shale originated but also because they are constantly on the lookout for unusual specimens different from any hitherto found.

SCIENTISTS' REACTIONS

One soon discovers that different fossils provoke various degrees of response. A Petrodus, Listracanthus, or coprolite, unless of abnormal proportions, is simply recorded but not hailed aloud. A phyllocarid or a fair-to-well-preserved fish or shark merits a raised eyebrow. Cephalopods, brachiopods, and the like may provoke an exclamation and are sure to be handed around for examination. Discovery of any specimen of really striking appearance, such as nearly complete fishes or sharks, precipitates an immediate scraping of chairs, a concerted rush upon the fortunate finder, a debate on whether to uncover the fossil farther or to X-ray the block, and a subsequent march en masse to the X-ray machine and the darkroom.

Although unmoved by the most exasperating circumstances, the curators, one discovers, are quite apprehensive that pieces may not interlock properly when a chart of one entire layer of shale is constructed by cutting out photographs of the individual charts and fitting them together. They are likewise apprehensive lest they lose half of a complete specimen under a section of quarry wall that may not have been properly removed. Finally, the curators are deeply concerned about maintaining consistent progress on the project.

To my surprise, I soon acquired the curators' zeal for the laborious and important task. I likewise managed to assume the typical attitude of forcing myself not to be upset when an occasional particle of fossil made recording difficult through failure to fit the large block so that its position could be determined.

This project, because it is a unique undertaking, evokes a greater degree of enthusiasm than one would usually find displayed over work on a pile of shale. The fever of accomplishment, thrill of discovery, and gratification of progress are contagious, quickly passing from our professional mentors to newcomers like my classmates and myself.

CHILDREN'S PROGRAMS CONTINUE IN APRIL

Five more free programs—one a puppet show—remain to be given on Saturday mornings during April. These entertainments for children are presented by the James Nelson and Anna Louise Raymond Foundation at 10:30 A.M. in the James Simpson Theatre. No tickets are required. Children are welcome alone, accompanied by adults, or in groups from schools, clubs, and other centers. Following are the dates and subjects:

April 2—SOME FAVORITE ANIMALS
Also a cartoon

April 9—EL NAVAJO
Also a cartoon

April 16—THE CARNIVAL OF INSECTS
THE FISHERMAN AND HIS WIFE
Two puppet plays, presented by Basil Milovsoroff

April 23—PEOPLE ALONG THE MISSISSIPPI RIVER
Also a cartoon

April 30—BEAVER VALLEY
Also a cartoon

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

AMERICAN SEASHELLS. By R. Tucker Abbott. D. Van Nostrand Company, Inc., New York, Toronto, and London, 1954. xiv+541 pages, 24 color plates, 16 black-and-white plates, 100 figures. $12.50.

If there is any need to demonstrate that the popular interest in shells has increased in the past decade, the comparatively high number of popular and semiscientific books on this subject that has been published recently would be sufficient proof. Most of the books on how to collect and to classify shells are helpful. Some of them, particularly the pocket books, are valuable in the field. Other types are more useful at home. None of them, however, is perfect, even to the extent that perfection in this field is possible.

American Seashells is almost an ideal combination of very good illustrations and solid facts presented in a text of everyday but by no means colloquial language. Of about 6,000 different kinds of shells found on our American coasts, some 1,500 are mentioned, comprising all the genera and most of the species that the average collector is likely to find on the beaches or in shallow water. The descriptions are concise, and geographical distribution, commercial importance, and other facts of interest are given in each case. There are hardly words adequate to praise the beauty of the illustrations, both those in color and in black-and-white. In these the Abbott book far excels similar publications of the past few years. *American Seashells*, however, might have been even more useful to the student if some kind of key had been provided to help the beginner find the class, order, and, perhaps, family to which a certain shell belongs.

INTRODUCING SEASHELLS, A Colorful Guide for the Beginning Collector. By R. Tucker Abbott. D. Van Nostrand Company, Inc., New York, Toronto, and London [1955]. 63 pages, 9 plates (5 in color), many text-figures. $2.50.

The author's book on *American Seashells* (see above) merited high praise, and so it is not surprising that another publication by the same writer should likewise be recommended here. This booklet, in contrast to the larger work, does not provide the student with full knowledge of seashells but seeks to attract interested laymen to their study. Hence the text concentrates on general facts and on how to collect, prepare, classify, and exhibit seashells. This information, made easily understandable by the simple language and by the wonderful plates and figures in the text, is presented as if to whet the appetite of the novice for personal experience in a promising new field of activity. We grant that this is really a good appetizer, though, unfortunately, in our opinion, a rather expensive one.

A FIELD GUIDE TO SHELLS OF THE PACIFIC COAST AND HAWAII. By Percy A. Morris. Houghton Mifflin Company, Boston. xx+220 pages, 40 illustrations (8 in color). Price $3.75.

This is the companion volume of the book on Atlantic shells reviewed in the BULLETIN of November, 1951. It deals with shells of the West Coast of the United States and of the Hawaiian Islands. The book closely resembles its Atlantic counterpart in format and is attractively printed. There are many good illustrations. However, I prefer those in black-and-white to the color plates, which look quite unnatural because of their overabundance of yellow.

A casual study indicates that the book should serve well its purpose of introducing the interested layman to the beauty and the overwhelming diversity of the shells he can pick up on beaches or dig up from beneath shallow water. The descriptions of various kinds of shells are neither too scientific nor too popular in style, and the scientific names used are, the author affirms, those currently in use according to the rules of nomenclature. Whether he is correct in this or not is, in my opinion, a matter of no consequence in a book of this kind, and even the scientist, who must and will occasionally consult it, should not be shocked by finding a name used that in his view is not correct. At least, the names given always permit the identification of a species beyond any misunderstanding, and that is what counts.

(All three reviews are by Dr. Fritz Haas, Curator of Lower Invertebrates.)

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Zoology, Vol. 34, No. 30. *The Annellated Coral Snake, Micrurus annellatus Peters.* By Karl P. Schmidt. December 23, 1954. 7 pages, 2 illustrations. 10c.

Fieldiana: Geology, Vol. 10, No. 20. *Note on an Eocene Crab, Harpactocarinus mississippiensis Rathbun.* By Eugene S. Richardson, Jr. December 27, 1954. 5 pages, 4 illustrations. 25c.

Methods and devices to attract birds to live in your garden are the subject of an exhibit in Boardman Conover Hall (Hall 21).

MUSEUM AUDITOR RETIRES; SUCCESSOR APPOINTED

Adelbert L. Stebbins, Auditor of the Museum, who retired on pension effective March 31, became a member of the Museum staff in 1931. After serving for several years in clerical capacities, he was assigned in 1937 to the Auditor's office as Bookkeeper. In 1948 he was promoted to the position of Assistant Auditor, and in 1953 he became Auditor. Mr. Stebbins was born in Camasaraga, New York, but in his early years his family moved to the Middle West, and he graduated from high school in Elburn, Illinois. He joined the United States Army in 1912, remained to serve through World War I, was commissioned a captain, and was transferred in 1919 to the Reserve. In civilian life, before coming to the Museum, he was employed by several firms in the Chicago area. Mr. Stebbins now plans to live in Clearwater, Florida, where he recently purchased a home. He has two sons in California, both of whom served with the U. S. Marines during World War II.

A. L. Stebbins

Robert A. Krueger, who recently was appointed Assistant Auditor, will succeed Mr. Stebbins as head of the auditing office. An alumnus of Northwestern University, Mr. Krueger was employed by several industrial firms before coming to the Museum.

Illinois Audubon Society Offers Two Screen-Tours in April

Screen-tours will be presented on two Sunday afternoons in April in James Simpson Theatre of the Museum by the Illinois Audubon Society. These lectures, accompanied by color films, begin at 2:30 P.M.

"Mormonland," fourth Audubon presentation in the current series, will be given on April 3. The lecturer will be Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History. His films cover a wide range of contrasting regions from salt lake and desert to mountains and deep-cleft canyons. The animals and plants of these areas are shown in their habitats.

On April 24 the season's concluding screen-tour will be "The Grass Forest," by Robert C. Hermes, well-known artist and nature photographer. In his unique films, he will give his audience a "worm's-eye view" of the world of tiny insects that dwell at our feet.

Admission is free, and the general public is invited. Two reserved seats apiece for each lecture are available to Members of the Museum and of the Illinois Audubon Society who present their membership cards before 2:25 P.M.

FIVE SATURDAY LECTURES TO BE GIVEN IN APRIL

The Museum's Spring Course for adults of free lectures on science and travel will continue on Saturday afternoons throughout April. The lectures, which are provided by the Edward E. Ayer Lecture Foundation Fund, are given in the James Simpson Theatre at 2:30 P.M. The list of dates, titles, and lecturers follows:

April 2—Hong Kong, Bamboo Curtain Colony
Phil Walker

April 9—Jewels of the Pacific Coast
Julian Gromer

April 16—The Holy Lands Today
Kenneth Richter

April 23—Mexico
Willis Butler, Jr.

April 30—Highlights of Australia
Allen Keast

No tickets are necessary for admission to these lectures. A section of the Theatre is allocated to Members of the Museum, each of whom is entitled to two reserved seats. Requests for these should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

Admission is restricted to adults because accommodations are limited, but special free motion-pictures for children are given on the mornings of the same Saturdays under the auspices of the Raymond Foundation.

PHONOGRAPH RECORDS

(*Phonograph records reviewed in the* BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.*)

WESTERN BIRD SONGS. A 78-r.p.m. 10-inch record. Cornell University Records, Cornell University Press, May 1, 1954. $2.50.

AMERICAN BIRD SONGS. Vol. 2, A 33⅓-r.p.m. 12-inch record. Cornell University Press, May 1, 1954. $7.75.

These records arrived at a very opportune time for me. The second grade in the school in the community where I live was studying birds with the aid of Audubon Society leaflets, industriously coloring outlines of robins with crayons. After hearing the records I lent them to the teacher to try on her pupils. She is enthusiastic about them as auxiliary teaching material and I shall send them back to the school for further sessions with another teacher.

The novelty of hearing bird songs from a phonograph caused some preliminary giggles, but soon the pupils were entranced. Some recognized a few of the songs as familiar. An immediate increase of interest in birds in our neighborhood was evident. But it took an unexpected form. The first broods of young robins were just leaving their nests. The younger children started to round them up, intending to act the part of foster parents, and it took firm remonstrances of my wife to have them returned to the bushes where they're better off under the care of their parents.

The first record is a collection of the voices of ten familiar western birds recorded by Dr. W. R. Fish. The second, the publishers say, makes available on a long-playing record the voices recorded on the 76-r.p.m. records in the earlier album of the same name. The voices of common birds of gardens, roadsides, marshes, and lakes are grouped according to habitats. Each is announced by name with a short comment by Dr. A. A. Allen.

AUSTIN L. RAND
Curator of Birds

PLEASE NOTIFY MUSEUM IF YOU'RE MOVING

Members of the Museum who change residence are urged to notify the Museum so that the BULLETIN and other communications may reach them promptly.

Members going away for extended periods may have Museum matter sent to their temporary addresses.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: Phillip H. Lewis, Chicago—14 ethnological specimens, Lossu and Libba villages, New Ireland.

Department of Botany:

From: Archer-Daniels-Midland Co., Decatur, Ill.—6 samples of soybean-oil-meal products; Dr. Ellsworth P. Killip, Washington, D. C.—172 phanerogams, Isle of Pines, Cuba, and Florida Keys; U. S. Department of Agriculture—seed of *Glycine ussuriensis*, Stoneville, Mississippi.

Department of Zoology:

From: Lt. Col. Kenneth F. Burns, Fort Sam Houston, Tex.—6 bats; University of Michigan, Ann Arbor—miscellaneous bones, Guatemala; Royal Ontario Museum of Zoology, Toronto—garter snake (neotype); Shedd Aquarium, Chicago—seaturtle; Gordon R. Thurow, Bloomington, Ind.—10 salamanders, Illinois.

EXPEDITION TO MEXICO AND SOUTHWEST

A Museum expedition to collect reptiles, amphibians, and small mammals in southwestern United States and northern Mexico will get under way on April 12. Members of the party will be Dr. Karl P. Schmidt, Chief Curator of Zoology, D. Dwight Davis, Curator of Vertebrate Anatomy, and Hymen Marx, Assistant in the Division of Amphibians and Reptiles. Arizona and New Mexico will be the first areas where work will be undertaken. The expedition, which is to be in the field about six weeks, will experiment with special techniques both in collecting specimens and in photography.

NEW MEMBERS

(February 15 to March 15)

Associate Members

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Visit Museum Book Shop If You Like to Browse

An ever-larger variety of books on natural history, children's books, and such merchandise as Navaho silver jewelry, ivory carvings by Alaska Indians, unique souvenirs, and toys may be found in the Book Shop of the Museum. You are invited to browse to your heart's content amid pleasant surroundings.

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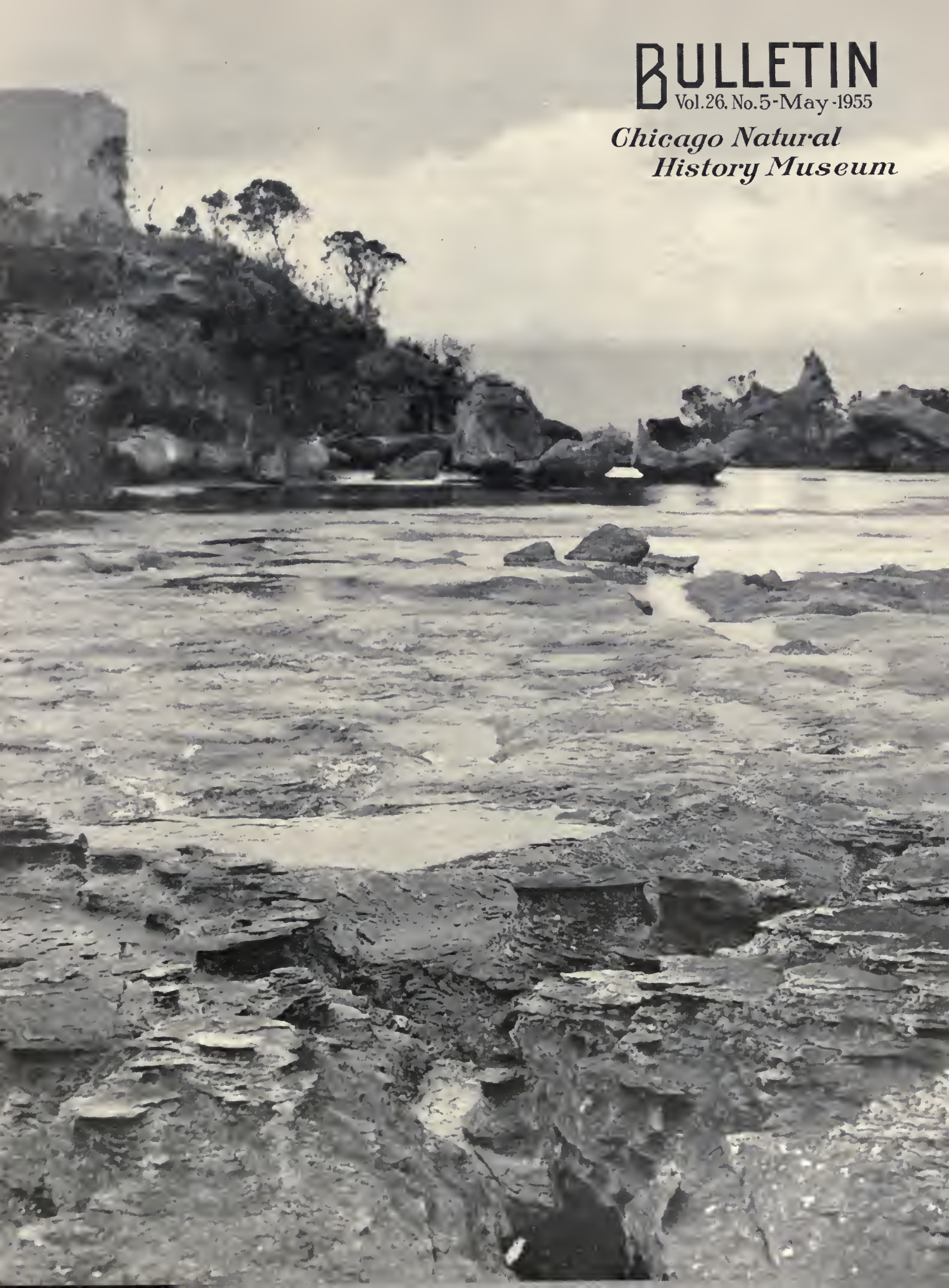
Chicago Natural History Museum



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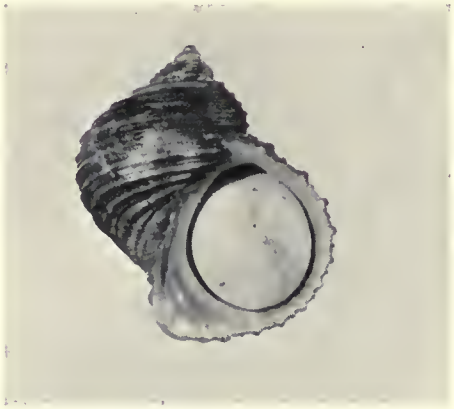
COAPTATION IN SNAILS, TURTLES AND ARMADILLOS

BY KARL P. SCHMIDT
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

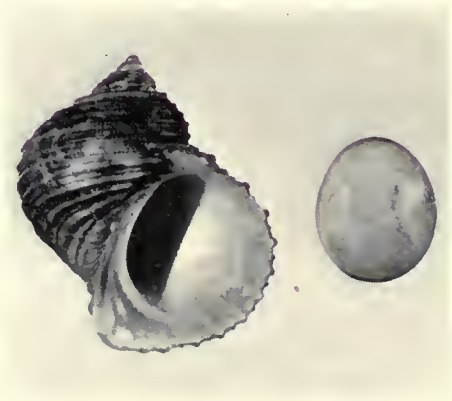
"PHRAGMOSIS" is the ecological term for crawling into a hole and pulling the hole in after one's self (as the American colloquialism has it), as related in an earlier article (BULLETIN, March, 1955). The phragmotic devices evolved in animal bodies, like the bony heads of certain toads and tree-frogs, by which animals close the holes into which they retreat are quite evidently related to a still more widespread phenomenon. In this, the separate parts of an animal's body (often the front and rear end) have evolved to fit each other, as when an animal rolls into a ball or when an animal already protected by a shell develops the capacity for closing the openings left when head and limbs, or even the whole body, are pulled in for concealment.

This kind of adaptation of separate parts of the body by evolution is referred to as *coaptation*. In a sense such evolution is only a special case, though a conspicuous one, of the interadaptation of structures and functions in the bodies of all animals, which must evolve as wholes, with the function of the lungs adjusted to that of the heart and that of the nervous system to every movement of the body. Nevertheless, the very exact adjustment of one part of the external covering of the body to fit against another part, sometimes at the opposite end of the animal, may be so striking and often so remarkable in the details of its mechanical perfection that the term coaptation is useful and is, in fact, in current use to describe this kind of adaptation. It may be extended to apply even to those plants that have movable parts, like the clovers and other legumes whose leaves fold up for the night.



TRAPDOOR OF SNAIL, CLOSED

Operculum attached to animal's foot-muscle by which it may be retracted, as shown above, or opened. On Pacific island beaches these were frequently mistaken for "cat's-eyes" by servicemen.



SNAIL'S TRAPDOOR REMOVED

Illustrating construction of protective shield and showing why it might be mistaken for a gemstone.

MECHANICAL PRECISION

The extremes of mechanical perfection of such adjustments may be especially notable in insects and crustaceans, in which there is a watch-like precision of fit of the movable parts that connect with the hard external covering. In such creatures a great number of elements of the body-covering may be modified to fit together when the over-all adaptation is for rolling into a compact ball. Rolling into a compact ball is a defensive reaction in some kinds of sow-bugs (the familiar little land crustaceans found in damp places), in certain tropical millipedes, and in various quite distinct groups of beetles. There should perhaps be a term for "rolling up into a ball," for this is a habit somewhat different from the familiar retreat into a shell of the mussels and snails, and different also from the withdrawal of the heads and limbs of turtles into their bony case.

Coaptation is often illustrated in various stages of the evolution toward perfection in animals that retreat into a shell. One of the most familiar devices for closing the opening in a protective shell is the operculum of many different kinds of marine and freshwater snails. This may be a shield of horn-like material, or it may be composed of the same material as the shell. After World War II, museums were showered with inquiries from servicemen about the "cat's-eyes" they had picked up on the beaches of the Pacific islands. These objects were the shelly opercula of various kinds of marine snails. An element of confusion was introduced into these inquiries by the more proper application of the term cat's-eye to a semi-precious mineral that is often cut as a gemstone. The snail opercula, with their coiled structure and bright colors, are ornamental; but the inquirers had to be told that they were not semiprecious. The now familiar use of the term cat's-eye for the bright-colored snail opercula does not seem to have found its way into the dictionaries.

TURTLE'S DEVICES

Less familiar instances of closing up a shell by the co-ordinate evolution of different parts of the body are to be found in turtles. In almost every family of this reptilian order some genus has carried the concealment of

(*Continued on page 6, column 2*)

THIS MONTH'S COVER

"River found on a mountaintop in a 'lost world'" would appropriately describe the scene depicted on our cover. The photograph was taken by Dr. Julian A. Steyermark of the Department of Botany at the spot where his expedition in Venezuela successfully broke through jungle tangle and rock barriers onto the summit of Chimantá-tepuí and stepped into this weird landscape. The picture shows the Tirica River as it flows across the unusually expansive and plateau-like mountaintop at an altitude of about 6,300 feet. The expedition pitched its camp beside this river and for a month worked in the surrounding area collecting plants and zoological specimens. The banks of the river are lined with many peculiar rock formations. Curator Steyermark's account of the expedition, from which he has just returned, appears on page 3.

RARE PLANTS AND ANIMALS DISCOVERED IN 'LOST WORLD'

By JULIAN A. STEYERMARK
CURATOR OF THE PHANEROGAMIC HERBARIUM

THAT MYSTERIOUS and awe-inspiring area of Venezuela known as the "lost world" can always be counted upon to provide adventures and misadventures as well as an abundance of plants and animals for the museum collector, including many species hitherto unknown to science. On the 1954–55 joint expedition of Chicago Natural History Museum and New York Botanical Garden, this land of rugged mountains, rushing streams with many rapids, and strange terrain did not fail to provide its customary thrills and rigors, but it rewarded the two participating institutions with notable collections exceeding even our expectations when plans were being made.

BACKBONE OF AN EXPEDITION

Some of the twenty Indian porters required to transport the packs containing about 5,000 pounds of provisions and equipment through jungles, over streams, and up mountains for the botanical expedition to the Venezuelan "lost world."

Co-leader of the expedition was Dr. John J. Wurdack. We sailed from Philadelphia on December 23, 1954, on a Gulf Oil Company tanker, *S. S. Coro*, and arrived at Puerto de La Cruz on December 30. Thanks to the co-operation of officials of the Mene Grande and Sinclair Oil companies, admittance of our equipment into the country was greatly facilitated. The paraphernalia was trucked the next day across the *llanos* to Ciudad Bolívar on the Orinoco River, nearly 300 miles (by air) southeast of Caracas. There food supplies for the next three months were obtained.

What does an expedition live on? Our provisions included such staples as 100 pounds of black beans, 150 pounds of rice, 200 pounds of lentils, large quantities of *casabe* (chief breadstuff of the Indians who were to accompany us), and large quantities of salt, coffee, native brown-sugar, onions, cereals, powdered milk, canned meats, and sardines.

We were ready the next day to fly to the airport of Urimán on the Caroní River with our load—nearly 5,000 pounds split up into 70 packs, which included besides the tons of food, a variety of trade goods, gear for camping, for cooking, and for collecting, old newspapers for pressing botanical specimens, an outboard motor for canoes, and drums of gasoline for it as well as for fueling the stoves used to dry plant-specimens. Then with a thud came news that because of local observance of the coming New Year's weekend, the cargo plane that was to transport our impedimenta could not leave Ciudad Bolívar until January 7; so we were faced with a week's delay. Concern over this developed into other worries about details of the expedition, particularly about whether I could obtain the invaluable services of Sabas Cardona, chief guide, and the other Indians who accompanied me on my expediton in 1953 to the same destination, the mountain of Chimantá-tepuí.

From Urimán I set out with a native worker on an arduous three-day trek to Uruyen, about 50 miles north, to sign up Sabas and his crew. After crossing numerous streams and mountains, we reached this village, the home of Sabas, on the night of a fiesta. I joined in the dances, and out of respect for the Indians' customs, tasted *kachiri*, a lavender-colored drink, made largely from the fermented root of the same *casabe* plant (the tapioca-yielding manihot) that the Indians use for bread flour. The next day Sabas rounded up friends and relatives from surrounding villages to make up the party of twenty Indians that I needed, and the day after that we began the long trek back to Urimán.

On January 14 our expedition started up the Caroní River. This involved portaging all the equipment around the 200-foot-high waterfall of Techiné-merú, then proceeding past the Indian village of Kon-quen and up the Tirica River to the original campsite of our 1953 trip at the base of the mountain. Three dugout canoes were used to bring the cargo upstream to base camp, and several trips had to be made to relay the three-months' supply of food and other equipment from Urimán to base camp at an elevation of 1,700 feet. This required more than a week. Then, while the old trail was re-cut to allow the cargo to pass through more easily, Sabas, four other Indians, Wurdack, and I went ahead to see how practical it might be to reach the summit via the uncompleted trail started by Sabas at the end of my previous trip.

Our flight on January 7 from Ciudad Bolívar had carried us over the summit of Chimantá-tepuí, and we had seen broad level stretches traversed by meandering streams. We knew, therefore, that if Sabas' uncompleted new trail headed in the right direction, paralleling the course of the Tirica River, we should reach this summit and be able to establish a campsite along the river. As good fortune proved, Sabas' trail took us through the tangled scrub forest to a point where the Indians could climb trees and take direction sights. On January 27 we were within sight of our goal. A few more hours of trail-cutting on January 28 brought us above another waterfall. Here we crossed the river where it had channeled and gouged out peculiar rock formations bordered by white sandy beaches.

WATERFALL NAMED FOR MUSEUM BOTANIST

This is Steyermark-merú or Julian A. Steyermark Falls, thus named by Indians of the "lost world" in honor of the explorer on an expedition in 1953. Photographed for first time by 1954-55 expedition to the same area.

At last we reached the summit and in a short time established a campsite on a level open stretch of white sand surrounded by

myriad kinds of peculiar plants. Here Wurdack and I stayed, assisted by Sabas, while the other four Indians returned to help carry the remainder of the 70 pieces of cargo that were gradually being brought up. Finally, three weeks after having left Urimán, all the cargo arrived. The elevation at this point was 6,300 feet. Temperature went down to a low of 47 degrees at night and reached a high of 75 degrees in the shade during the day (47 degrees is the very lowest temperature ever recorded from the summits of any of the mountains of the "lost world"). We found ourselves surrounded by weird rock-formations and bluffs on all sides towering to still higher portions of the summit that reached an altitude of 7,500 feet. We kept eight of the Indians as regular workers until the end of the trip, sending back the twelve others who had assisted in bringing the cargo up the mountain.

From then on our collecting began in earnest. Trails were made in many directions to reach various parts of the extensive mountain-mass that is about 50 miles long and 40 miles wide. We explored as many sections as possible, sometimes remaining fully four days away from our main camp. We found uncharted waterfalls and unmapped rivers and their tributaries, and we took compass readings. We found ourselves adding significant geographical details to our data about this mountain as we explored different sections each day. New plants were discovered along every new trail traversed.

There were long stretches of open swampy savanna alternating with dry rocky slopes full of peculiar sandstone and quartz formations. There were numerous rifts and narrow chasms in the rocks that descended perpendicularly for a hundred feet or more. These often forced us into long detours. Some, however, were narrow enough to jump across. Sphagnum bogs with peculiar plants often lined parts of the river valley that seemed to wind endlessly across the summit. We reached edges of the escarpment of portions of the mountain that broke off into mile-high chasms and canyons of great length and magnitude. In such deeply eroded sections of Chimantá-tepuí, the scenery was truly of the most spectacular type, and we could see how the various lobes of the great mountain stretched out from here for miles and miles of unexplored fantastic areal surface.

Wherever we traveled on the summit of the main-central portion of Chimantá-tepuí, we could see miles and miles of meanderings of the Tirica River and its tributaries as they flowed over swampy savannas or through rocky openings to distant parts of the giant mountain. This was the most unusual feature of Chimantá-tepuí—that the main section of its summit should be well-watered by a good-sized stream, the Tirica River. This, indeed, was a real discovery, as previous maps of the mountain failed to reveal any stream running over the summit. Although some streams have been found on the summits of a few of the other mountains of the "lost world" section of Venezuela, Chimantá-tepuí is the first on which such an extensive river-system has been found traversing the summit. This has provided all sorts of habitats for swamp and aquatic plants and animals. Water-striders, water beetles, and many other kinds of aquatic insects were noted and collected.

The cool valleys with rivers occurring on the summit, ascending to 7,500 feet, were the habitats also for a number of Andean species of groundpine (*Lycopodium*), of a type found in the high mountains of Ecuador, Peru, and Colombia, and other Andean genera such as St. John's wort (*Hypericum*), cherry (*Prunus*), *Weinmannia*, holly (*Ilex*), various members of the heath family including huckleberry (*Vaccinium*), *Baccharis*, *Viburnum*, sedges such as *Carex*, an Andean tree (*Laplacea*) of the Camellia family, *Cestrum*, *Aegiphila*, and many others. This vast assemblage of plants of the cooler temperate climate was intermingled with other genera of plants known only from the mountains of the "lost world" area.

ANIMAL SPECIMENS COLLECTED

Although we climbed and hiked many miles each day, bringing back marvelous specimens, we realized that only the surface aspects of this remarkable summit could be touched within the time at our disposal. We could remain only until March 2, and then would have to start down the long trail again. During the six weeks on the summit, we collected 1,500 different species of plants, totaling about 10,000 duplicate specimens. Photographs were taken of various plants and details of scenery to add to the geographic knowledge of the mountain. Remarkable zoological discoveries also were made during these six weeks. A small catfish was found in the river near our summit campsite at 6,300 feet, and specimens were collected for the Museum. This is the first record of any fish ever taken from the summit of any of the mountains of the "lost world." Other interesting collections made on the summit were lizards, frogs, snakes of several kinds, including a distinct species of poisonous fer-de-lance (*mapanare*), snails, termites, various other insects, spiders, centipedes, millipedes, earthworms, a species of grebe, a coati mundi, and a white-eared opossum. The two mammals are the largest fur-bearers found on the summit. Bats were seen in flight, but we were unable to snare any in our bat net. Several small birds were collected, two of them new to the Museum's collection.

Although there were numerous rainy days, the weather was in our favor during most of the trip, expediting travel and collecting. Altogether, about two weeks were required on the return trip from the time our cargo left the summit of the mountain until we all reached Urimán on March 17. Here everything was packed for the trip by plane back to Ciudad Bolívar, where a truck carried the expedition's collections to Puerto de La Cruz. On March 25 the *S. S. Las Piedras* sailed with the treasures of Chimantá-tepuí aboard, arriving in Philadelphia on March 30. Half of the botanical specimens will be deposited with New York Botanical Garden and half with Chicago Natural History Museum. Many new species were found. A joint botanical report by the two institutions will be published eventually, encompassing the results obtained by this expedition and by those conducted separately by us in 1953.

Director's Annual Report Ready for Members

All Members of the Museum will soon receive their copies of the Annual Report for 1954 of the Director to the Board of Trustees, which has just been published by Chicago Natural History Museum Press. It is a volume of 146 pages and contains 24 illustrations. All phases of the Museum's activities are covered by Colonel Clifford C. Gregg, Director — expeditions, research, accessions, new exhibits, building maintenance, etc.

Mammals of the Sea

An especially attractive array of sea mammals, with painted backgrounds and built-up scenes representing their habitats, is to be seen in Hall N. One group shows Pacific walruses on an arctic ice-floe lighted by the midnight sun. Equally impressive are the elephant seals, largest of all seals, on the beach of Guadalupe Island and the giant northern sea-lions of the coast of Washington. Other mammals are Pacific seals (smallest of earless seals), northern fur seals in the Pribilof Islands, the narwhal, and a pair of Florida sea cows. A representation of the snow and ice of the Antarctic provides the setting for specimens of Weddell's seal collected by the Second Byrd Antarctic Expedition.

Devotees of the current do-it-yourself trends in making furniture and other useful household articles in home workshops will find the exhibits in Charles F. Millspaugh Hall (North American Woods) and the Hall of Foreign Woods (Halls 26 and 27) of special interest. Here they may study the characteristics of different woods in order to select those most suitable to a particular purpose or design.

SPARROWS JOIN EXODUS FROM CITY LIFE

By AUSTIN L. RAND
CURATOR OF BIRDS

THE FLIGHT of city dwellers to the suburbs has been going on long enough for sociologists to write accounts of its influence on the social structure of the nation, for builders to devise a prefabricated house that takes little more time to put up than to have a well-built martin house made and installed, and for economists to view with alarm the tax situation in the cities.

House sparrows have changed, too. They used to be concentrated in the cities. This was so noticeable that old ecology textbooks used the sparrow as an example of an animal whose population density correlated directly with the density of human population. But it's no longer true.

For the last few years I've been noting the situation in Chicago. On Michigan Avenue, on the edge of Grant Park, and on the South Side where the buildings are spaced out a little there are sparrows. But they've gone from the heart of Chicago. I've seen none in the Loop. There are pigeons, yes. On Van Buren Street and about the La Salle Street Station there are scores of them. Sometimes the flocks number a hundred or more. Sometimes I see them looking for scraps in the alleys, sometimes they're getting a good feed of grain that some kind-hearted birdlover has poured out for them (I've wondered what influence the proximity of the Grain Exchange of the Board of Trade may have on this), and sometimes they're cadging peanuts from the passengers at the elevated stations. There's evidently food in plenty for pigeons, but it doesn't suit the sparrows.

THE AUTO DID IT

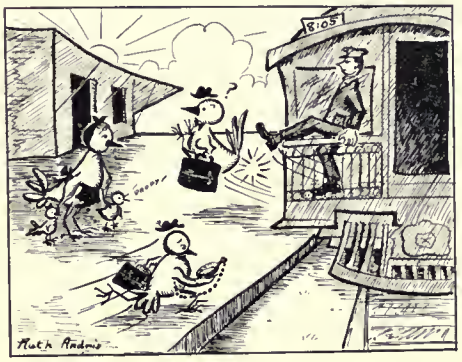
The motor car has made suburban living possible. It has made feasible supermarkets, drive-in theatres, and homes remote from public transportation. I know people who work in the city who drive 10 or 15 miles to get to their morning train that takes them cityward.

It was likewise the motor vehicle that caused the shift in the sparrow population out of the city. But the factors at work reflect a different aspect of the change. Before motor transport, horse-drawn vehicles were the standard transportation in the city. Where there were horses there was waste grain in abundance, and it supported a dense sparrow population in the centers of cities. With the replacement of horses by motors, the sparrows' food supply disappeared, and the sparrows disappeared or became scarce in the cities.

There are lots of sparrows in the suburbs, visiting bird feeding-stations and picking up scraps, but for real sparrow concentration one must go a little farther out where people are raising pigs and feeding them well on a special ground-grain diet. About such feed lots I've seen hundreds of sparrows in a winter afternoon. The wheat fields in late summer are rich feeding grounds, too, and also we find sparrows spreading out during the summer even to the picnic grounds on the Lake Michigan beaches. But with winter they must withdraw to the feed lots in order to survive.

CORRELATE WITH HOGS

The ecology textbooks will have to revise their correlations about house sparrows. They will have to write that after the introduction of the house sparrow into North



America and before the widespread introduction of the automobile into our culture, the sparrows' population density varied directly with the density of one kind of domestic animal, the horse. With the wide use of motor cars, the sparrows' population density suffered a shift, and now it correlates with the density of another domestic animal, the hog.

In reading over the above I realize that I may have given the impression that the suburban sparrow commutes, catching the 8:05 each morning for the city and returning, weary, on the 6:10. This is not so. There may be slight seasonal shifts and a greater concentration of sparrows about food lots and villages in the winter, but the suburban sparrows are suburban twenty-four hours a day.

STAFF NOTES

John R. Millar, Deputy Director, will be a speaker on "Careers in Museum Work" on a program to be given Saturday, May 14, at 3 P.M. over WBBM-TV .... **Dr. Theodore Just,** Chief Curator of Botany, recently conducted a seminar for the department of botany at the University of Illinois in Urbana .... **Dr. B. E. Dahlgren,** Curator Emeritus of Botany, has returned from Cuba where he has been continuing the collecting and study of palms .... **Loren P. Woods,** Curator of Fishes, recently lectured on cave fishes at the annual convention of the National Speleological Society held at Natural Bridge, Virginia.

EL SALVADOR BIRD BOOK BY MUSEUM WRITERS

El Salvador has just attained the distinction of being the only Central American country with a guidebook to its bird life. The generally increasing interest in science found expression in El Salvador in 1950 with the establishment of a research station, Instituto Tropical de Investigaciones Cientificas de la Universidad de El Salvador. In support of this new research project, Chicago Natural History Museum sent several members of its scientific staff to carry on investigations there. They were Dr. Sharat K. Roy, Chief Curator of Geology, who is now in El Salvador again investigating volcanoes; the late Dr. Norman C. Fassett, of the University of Wisconsin, who was sponsored by the Museum in a study of aquatic plants; and Dr. Austin L. Rand, Curator of Birds, accompanied by Stanley Rand, who studied birds.

One of the early fruits of the co-operation is the bird guide, in Spanish, entitled *Manual de las Aves de El Salvador,* by Curator Rand and Melvin A. Traylor, Research Associate in Birds, which was published recently by Universidad de El Salvador. The basic research in El Salvador had, of course, already been done by A. J. van Rossem and was published in 1938 by the Museum in a volume for the specialist. This new *Manual,* which carries the work one stage further, was prepared for the general reading-public of El Salvador.

The *Manual,* arranged in systematic order, provides keys for the identification of members of each bird family. Under each form is a description, a paragraph about the young, and notes on identification and range—all of this the work of Traylor. A summary of each bird's life-history and finally a word-sketch of the bird in its habitat based on van Rossem, other literature, and first-hand experience in the field are by Curator Rand. The manuscript was translated from English into Spanish in San Salvador. The illustrations, by Douglas E. Tibbitts, Museum Staff Illustrator, are reproduced from Associate Curator Emmet R. Blake's *Birds of Mexico.* The book, which was printed by offset lithography, is bound in paper (308 pages, 7½ by 9¾ inches).

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays by advance request.

'ABOMINABLE SNOWMAN' OF THE HIMALAYAS

By ROBERT L. FLEMING
FIELD ASSOCIATE, DEPARTMENT OF ZOOLOGY

Dr. Fleming has given notable collections of Asiatic animals to the Museum. As an American mission-school supervisor in India he has been able to devote several months each year to his avocation as naturalist and has collected for the Museum in the Himalayas during various periods from 1938 to 1954.

WHEN I told about my Nepal bird work in the BULLETIN (December, 1954), I said nothing about the "Abominable Snowman." Actually I had written a paragraph on the subject, for accounts of travels in the Himalayas seem to be incomplete without some mention of this Snowman. But the subject had seemed so overdone that I left it out. Since then, however, I've seen references and speculations about the Abominable Snowman and been asked so many questions that I've written the following.

The editors of the *Journal of the Bombay Natural History Society* (August–December, 1954, pp. 594–598) have summarized the facts and theories about this Abominable Snowman:

(1) Only one eyewitness report is recorded—that of N. A. Tombazi, who writes that he had a fleeting glimpse of an upright figure, first taken for a man (later reported as a Snowman), dark but without clothes, in a glade between dwarf rhododendrons in a Sikkim valley. The creature left tracks similar in shape to those of a man but only 6 to 7 inches long. Tombazi conjectures that what he saw was a wandering man, perhaps a pious Buddhist ascetic, mortifying himself in the utter desolation of high places.

(2) Eric Shipton, the Himalaya climber, reports footprints 12½ inches long in the snow at an elevation of 12,000 feet, tracks that were considered by authorities at the British Museum to be monkey tracks.

(3) There are stories in Tibet of the *Yeti*, as the local people call the Abominable Snowman, playing in the snow (*Yeti* are said to kill and skin yaks and plant the horns in the ground).

(4) There are additional hearsay reports of seeing *Yeti*. One *Yeti* was described as five feet tall, covered with reddish hair and having a conical head. Another was said to have been seen walking on all fours, screaming, sometimes standing up on its hind legs and scratching its chest. A living *Yeti* being kept in a zoo at Shigatse, Tibet, was reported (news of a zoo at Shigatse is more fantastic than that of the existence of a *Yeti*, according to Lama Angarika Govinda, who knows the area). A giant figure was seen ambling along a railway track in the outskirts of Siliguri— this *Yeti*, knocking at a door and being mistaken for Yama, the God of Death, left footprints in the mud 14 or 15 inches long and 8 inches wide. Other reports ascribe a "peculiar whistling note" to the *Yeti*.

(5) A "scalp," said to be of a *Yeti* and used by the Lamas of Gompa as a leather cap in rituals, was seen by Navnit Parikh's party and by Dr. R. C. Evans, and a single hair taken from it was sent to Dr. L. A. Hausman, of New Jersey, an authority on hairs of all kinds. His report indicated that the hair had been dyed and that the "scalp" could well be an artifact.

(6) The recent *Daily Mail* (London) expedition in search of the Abominable Snowman was unsuccessful.

From the above it is obvious that evidence for the Abominable Snowman is composite: the footprints may be human; they may be the tracks of bears that live above timberline; they may be tracks of monkeys that live in the higher forests. Reports of the creature may be rooted in a belief in the supernatural; they may in part be manufactured.

My own experience with the Abominable Snowman is slight. I've climbed to the edges of the permanent snowfields and have seen no sign of it. My closest contact was in Kathmandu, where a year ago last winter I saw the little motor-car bustling about with "Abominable Snowman Expedition" painted on its sides—it was part of the expedition from London to investigate the matter. As far as I can learn, results have been slight.

Under the influence of museum thinking I've come to believe that we should accept the existence of animals only if actual examples can be examined. Disregarding secondhand evidence about the Abominable Snowman, we can only say that there is something living in the high Himalayas that makes tracks. These tracks resemble human footprints but are larger or smaller. They also resemble bear tracks, and they also resemble monkey tracks. Tracks in the snow become distorted and enlarged by the hot sun. Taxonomy based on tracks only is unlikely to be sound.

Until we get definite evidence to the contrary I think the safest course is to assume that one of the animals that could have made these tracks did make them: man, monkey, or bear.

COAPTATION—

(*Continued from page 2*)

the limbs and of the head and neck to a more than ordinary degree by the development of hinges at various points in the shell. These make it possible to close the front lobe of the plastron (the lower shell), the rear lobe, both ends of the plastron by separate hinges, both ends by a single hinge, and in one instance by a crude hinge at the rear of the carapace (the upper shell). In a remarkable series of genera of soft-shelled turtles, the limbs and head are withdrawn through separate openings, each of which has a separate valvular closure.

Rolling into a ball that is tightly closed by the meeting of the front and rear ends of an armored shell is conspicuously illustrated by the little three-banded armadillo abundant on the plains of Brazil and Argentina. The

PORTABLE PROTECTIVE SHELTER
The three-banded armadillo of South America offers an illustration of coaptation principles.

nine-banded armadillo that reaches the southern United States is often spoken of as if it habitually "rolled up into a ball." In truth, this form represents only a primitive stage in the ball-rolling habit, and one must see the three-banded *Tolypeutes* to appreciate the great advance it has made in this adaptation.

In the three-banded armadillo the three bands at the middle of the body form an effective hinge by which the solid front and rear shells can be brought together until their lower edges meet and the limbs and belly are completely hidden. The half round hole for the short tail and the similar opening for the head are thus brought together on one side of the armored sphere. This last oval opening is neatly closed by the juxtaposition of two bony wedge-shaped shields, respectively on the upper side of the tail and the top of the head. These wedges lie head to point so as to fit the opening with remarkable precision.

Coaptation in varying degrees pervades all animate creation. The phenomenon serves to emphasize the basic biological principle that the factors involved in the evolution of animal structures only rarely escape from the dominance of the whole to develop into the bizarre.

Visiting Hours Extended for Summer Season

Effective May 1 and continuing through September 5 (Labor Day) visiting hours at the Museum are extended by one hour. The Museum will be open daily, including Sundays and holidays, from 9 A.M. to 6 P.M. At the end of this period, hours will revert to 9 A.M.–5 P.M.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

WORLD OUTSIDE MY DOOR. By Olive Bown Goin. The Macmillan Company, New York. 184 pages. Illustrated. Price $3.50.

It is the charm of elementary studies in natural history that they are made for their intrinsic interest, not even for the furtherance of science with a capital "S," which, in fact, they may accomplish. The simple natural history that begins in one's own garden and backyard goes back to Linnaeus himself, as anyone may discern if he visits Linnaeus' summer home at Hammarby. Linnaeus became involved in the larger work of painting in the outlines of the vast panorama of the Systema Naturae, and thus it fell to Linnaeus' contemporary, Gilbert White, through his *Natural History and Antiquities of Selborne* to found the school of homely and local natural history, with its strong alliance on the one hand with literature and on the other with the more advanced studies in botany and zoology.

America has not lacked its practitioners of the natural history of the home locale, and I am myself happy to acknowledge a debt to the influence of Anna Botsford Comstock and of Frank E. Lutz. In the Chicago region we are proud of Edwin Way Teale and regretful that we could not keep him to fulfill this role in the Middle West. In Olive Bown Goin we welcome a Florida version of the beginning of a *Selborne*, in which the fortunate setting of northern Florida for dooryard observations is new.

Mrs. Goin, who has a naturalist-husband, has touched on an occasional scientific problem, such as fluctuation of populations and those details of the lives of her tree-frogs that are too likely to be neglected by more professional naturalists. Still, I feel that the greatest merit of her admirable little book is that she has set forth the charm of nature-study as a family enterprise, in which the youngest children may participate, and in which husband and wife may alternate, and on occasion join hands.

World Outside My Door is recommended to parents and to prospective parents as a guide to a practical and effective introduction of children to science, to the scientific method, and to orderly thinking. Little more equipment is needed than a recording thermometer and a notebook, though I should add a rain gauge. Perhaps most important of all, the children may glimpse something of the value of pure science, something of the "divine curiosity" that infuses science with its special kind of non-selfish objectivity. The difference between pure science and technology is too little emphasized in the modern world and too little understood. An understanding of the difference and an understanding of the ethical values of pure science will be of vital importance to that new generation of human beings with whom Mrs. Goin as parent-naturalist and I as museum naturalist are concerned.

KARL P. SCHMIDT
Chief Curator of Zoology

PROGRESS IN PACIFIC RESEARCH LABORATORY

Rapid progress is being made in preparation of the new Pacific Research Laboratory at the Museum, and only a few more months remain before it reaches completion. Already some 10,000 ethnographic specimens from Polynesia, Micronesia, Melanesia, Australia, Indonesia, the Malay Peninsula, Madagascar, and the Philippines have been transferred to their new home on the ground floor of the Museum.

MASKED MEN HANDLE POISONED MASKS

Roger T. Grange, Assistant in Anthropology (left), and Robert Lamb, Antioch College student, transfer grotesque headgear used by the Sulka people of Melanesia to the poison room in the new Pacific Research Laboratory of the Museum. As the specimens are moved to their location they are checked, cleaned, and often repaired. The laboratory was established to achieve maximum efficiency in handling, preservation, and study of collections.

Transfer of the collections from fourth floor storerooms began last June when all specimens were checked, cleaned, and repaired if necessary. Before the laboratory is ready, 100 exhibit cases in Hall G must be stripped and their contents moved to the new location.

The laboratory, which will contain a storeroom, workroom, and poison room, will make available for study and research one of the world's most important reference collections in this field. Included in the storeroom's contents is one of the world's largest collections of Melanesian specimens. Separating the workroom from the storeroom is an iron gate to safeguard the collections from possible vandalism or mishandling. Catalogue cards will be kept so that all specimens are easily accessible to persons wishing to examine them. Much of the material has been accumulating for a long time—some specimens date back to the 1890's.

E. D. Hester, holder of the Thomas J. Dee fellowship for highly specialized research projects, is in charge of the project, which is receiving material aid from the Wenner-Gren Foundation for Anthropological Research and the Philippine Studies Program. The latter is financed by the Carnegie Corporation of New York and is conducted by the University of Chicago, Newberry Library (Ayers Collection), and this Museum. Mr. Hester is associate director of the Philippine Program.

Technical Publication

The latest technical publication issued by Chicago Natural History Museum is:

Fieldiana: Geology, Vol. 10, No. 21. *Fauna of the Vale and Choza: 10; Trimerorhachis: Including a Revision of Pre-Vale Species.* By Everett Claire Olson. March 30, 1955. 50 pages, 15 illustrations. 85c.

Artifacts of Early Indians Collected in Louisiana

Two strata pits in one of the earthworks near the large mound of the Indians who lived at the Poverty Point site in Louisiana from about 800 to 400 B. C. were excavated last month on a field trip conducted by George I. Quimby, Curator of North American Archaeology and Ethnology. A large assortment of cultural objects was obtained for addition to the Museum's anthropological collections. The famed site is in West Carroll Parish in the northeastern part of the state. Curator Quimby worked in an area in the south end of the site. He was granted use of the facilities of the American Museum of Natural History's expedition, which is undertaking intensive investigations in the northern half. The Poverty Point site is archaeologically unique.

'TRAVEL EXCURSIONS' FOR YOUNGSTERS

A number of children's programs—"journeys" to foreign lands via the Museum—are currently in progress under the guidance of the Raymond Foundation staff. Children who complete four journeys in one year will be officially honored by the Museum as "Museum Travelers." The first journey offered in 1955 was the journey to Africa. It was called "Listen to the Drums" and started officially on March 5 with the opening of the Saturday-morning movie series for children. A special exhibit of drums and other African material was the starting point for this journey. The next journey will be in July and August. These journeys are open to all children and may be taken on weekdays, Saturdays, or Sundays. Children may travel alone or with their families or friends. The journeys are given four times a year: during March and April, July and August, October and November, and December and January.

EXPEDITION MAKE-BELIEVE

Another type of journey was offered on April 16 to Brownie Scouts (junior members of the Girl Scouts). More than 800 Brownie Scouts, leaders, and mothers started on this "expedition" by attending the morning program for all children in James Simpson Theatre of the Museum (Basil Milovsoroff's puppet shows). Following this, the Brownies "traveled" via Museum exhibits to China to see the Chinese shadow figures, to Java to see the Javanese puppets, and finally back to the United States to see the kachina dolls of the Southwest Indians. But that isn't all. The Brownies follow up this expedition with reading and group activities for a month in their individual Brownie troop-meetings. Those troops that complete successfully the requirements for this expedition will receive certificates on June 1 signed by Colonel Clifford C. Gregg, Director of the Museum. The expeditions for Brownie Scouts are open to all Brownies and are given once a year.

'JAM SESSION'

Getting into the "swing" of things African by sampling the sound of some native drums are (left to right) Bobby, Ingrid, and Reynold Stephan of Arlington Heights and John Lawrence of Highland Park. Exhibit in background is destination of "African Journey," first of four "Museum Traveler's" excursions for children conducted by the Museum's Raymond Foundation staff.

University Honors Curator

Dr. Julian A. Steyermark, Curator of the Phanerogamic Herbarium, has been awarded the Alumni Citation of Washington University, St. Louis, "in recognition of outstanding achievements and services which reflect honor upon Washington University." Curator Steyermark is one of the first alumni of Washington University to be accorded this honor, awards of which were instituted this year. He was a member of the liberal arts class of 1929, and he pursued further studies in the graduate school of arts and sciences in 1930 and 1933. He has been a member of the staff of the Museum's Department of Botany since 1937 and has conducted a number of expeditions. An account of his latest expedition to the "lost world" of Venezuela, from which he returned last month, appears in this issue of the BULLETIN.

NEW MEMBERS

(March 16 to April 15)

Associate Members

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Sustaining Member

C. R. Jonswold

Annual Members

Miss Lucile M. Beckstrom, E. O. Boe, Mrs. Hedwig F. Brann, Edmund L. Burke, Herbert R. Carpenter, Mrs. E. Bartholomay Chapin, William F. Conlon, Dr. Vincent A. Costanzo, Jr., Ralph Cowan, Ben T. Crane, George M. Crane, Mrs. Jerome H. Debs, Miss Alvertta Drake, William N. Erickson, Earle C. Faulkner, Lafayette Fisher, Dr. James F. Fleming, John Freeman, Philip S. Harper, L. J. Hartigan, Dr. K. J. Hebenstreit, Frederick Herrschner, James J. Hill, Dr. Maurice M. Hoeltgen, Edwin E. Hokin, Gerald Hollins, Dr. Imre E. Horner, Mrs. Willis O. Hyde, W. G. T. Hyer, James A. Jensen, Frank S. Kanelos, Meyer Katz, Mrs. Ruth Kegel, Edward C. Kent, Frank B. Kozlik, Rico B. Krehl, Mrs. Marie Kuchar, J. E. Levering, Warren H. Lieb, T. W. Lietz, Mrs. Mason A. Loundy, William G. Loventhal, Sidney W. Mandel, Alvah T. Martin, Paul H. Mesenbrink, Dr. Cecelia E. Miller, C. E. Nelson, O. C. Peterson, Herbert F. Philipsborn, Frank J. Riha, Harold L. Samuels, Miss Marion H. Schenk, Kenneth E. Shepard, Joseph J. Shine, Mrs. Solomon B. Smith, James C. Spangler, Miss Anne Spanik, Mrs. Robert E. Spiel, Dr. Simon L. Sprtel, M. Bradley Stevenson, Richard O. Stoaks, E. H. Stubenrauch, Dr. Fred J. Stucker, Wayne Swonk, Byron M. Sykes, Mrs. E. L. Todd, Dr. Samuel Tolpin, C. Radford Van Ness, Miss Winifred Ver Nooy, Frederick G. Wacker, Jr., E. Todd Wheeler, W. L. Wheeler, Charles J. Whipple, Jr., J. W. Wirth, Dr. Theodore D. Worth

EXHIBIT OF NATURE-ART BY MUSEUM CLASSES

A selection of about fifty paintings and drawings from the junior and advanced classes held in this Museum by the School of the Art Institute of Chicago is being shown during May in Stanley Field Hall. The sketches are fanciful, with gay colors in a variety of mediums including crayon, water-color, and tempera. These young artists evidently have no difficulty in finding interesting subjects in the Museum—animals seem to be favorites—and improvisations are often added to the chosen subjects. The youngest exhibitor is nine years old. The pictures in the exhibit were selected by Miss Maidi Wiebe and Gustaf Dalstrom, Artists in the Museum's Departments of Geology and Anthropology respectively.

GIFTS TO THE MUSEUM

Following is a list of principal gifts received during the past month:

Department of Botany:

From: Holly Reed Bennett, Chicago—1,221 phanerogams; University of California, Berkeley—isotype (*Bouvarida Alexandrae* Carter), Lower California and Mexico; Conservator of Forests, Sandakan, North Borneo—101 wood handsamples; Dr. Egbert W. Fell, Rockford, Ill.—*Triplasis purpurea*, 308 Illinois plants; Dr. Walter Kiener, Lincoln, Neb.—256 algae; Kung-Chu Fan, Chicago—14 algae; Dr. Lore Kutschers, Lafayette, Ind.—*Atriplex patula;* Dr. Chester S. Nielsen, Tallahassee, Fla.—428 algae; Dr. Paul D. Voth, Chicago—118 marine algae; Ernest J. Palmer, Webb City, Mo.—531 phanerogams; U. S. Department of Agriculture, Beltsville, Md.—seed samples of 36 species of agricultural legumes; Universidad Nacional de Colombia, Bogotá—Meliosma

Department of Geology:

From: University of Chicago—variety of mammals from Miocene, Pliocene, and Pleistocene, Montana

Department of Zoology:

From: Dr. Gregorio Bondar, Bahia, Brazil—2 fishes; Dr. Arthur N. Bragg, Norman, Okla.—23 lots of tadpoles; Lt. Col. Kenneth F. Burns, Fort Sam Houston—3 bats, Texas and Mexico; J. W. Green, San Francisco—2 paratypes (fireflies), *Photinus dimissus*, Kentucky and Texas; Dr. Alfred Heinzelman, Piura, Peru—3 squirrels, 15 rodents; Harry Hoogstraal, Cairo, Egypt—9 bats, Turkey; Tom McCafferty, Spring Grove, Ill.—6 brown trout

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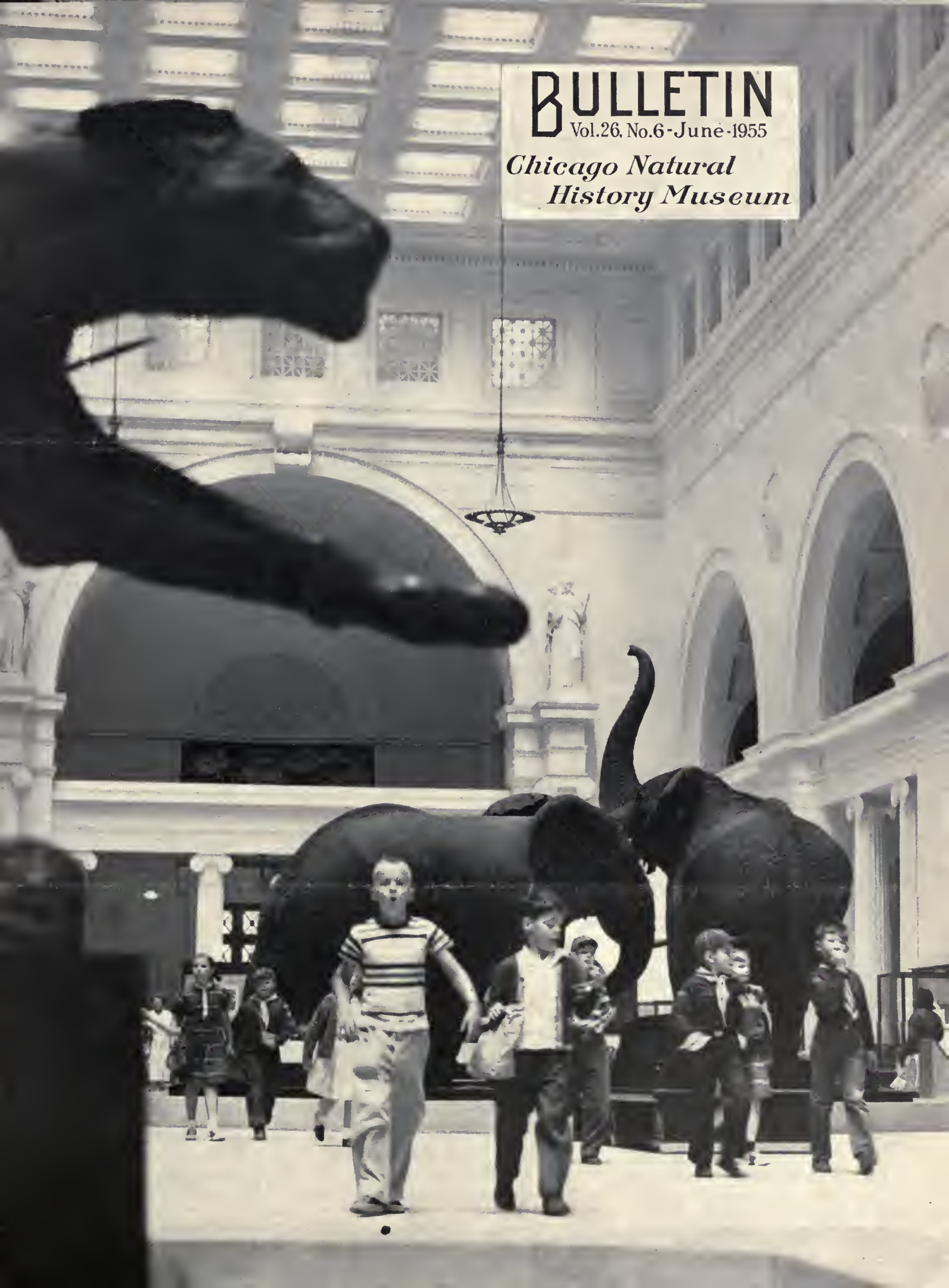

BULLETIN

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Chicago Natural History Museum

Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

PAUL GEORGE DALLWIG

1885—1955

The voice of The Layman Lecturer is stilled.

Paul George Dallwig died suddenly on May 14 after a heart attack. He had been familiar since 1937 as the man who gave his Sundays to conducting thousands of Chicagoans and visitors on tours of exhibits in the Museum, interpreting authentic scientific facts about the exhibits in the language of the average man, and frequently staging with full theatrical flare dramatized versions of incidents in the lives of prehistoric people and animals.

Paul G. Dallwig

Mr. Dallwig, who was 69 at the time of death, made a notable contribution to the Museum and to the public. He brought the Museum to the attention of thousands of people, many of whom, without the stimulation of a special attraction such as he presented, might not have received the benefits offered by the institution. To large segments of the public he opened new vistas in scientific knowledge and thought that they, without his guidance, might not have known.

To this commendable undertaking Mr. Dallwig gave much more of himself than was apparent. He contributed far more than the hundreds of Sunday afternoons devoted to the lectures themselves. Every lecture represented many hours of day and night research for weeks at a time. His preparations were thorough and elaborate. Hours and hours of reading, of planning, of thought, of script-writing, and of rehearsal preceded every lecture. Often a script was rewritten ten or twelve times. And for this chosen task, over the years he never received or wanted a penny of compensation. He was listed as an honorary member of the Museum staff with the title "The Layman Lecturer," for his work was entirely a labor of love to which he committed himself because of his interest in science, in the Museum, in people, and in conveying knowledge to vast numbers who would not have had his patience in probing into esoteric sources for themselves.

WON NATIONAL PROMINENCE

His contribution was truly unique in concept and execution, and he performed this work with such skill that it attracted the attention of the press, including several national magazines that published "profile" articles about him and his work. The interest developed and led to many calls for his appearances on other platforms, and he became even more widely known on several lecture tours over the country.

All of Mr. Dallwig's activity for the Museum and his subsequent lectures elsewhere were carried on while he conducted, in addition, several successful business enterprises. He was the rare example of a busy man who despite his personal obligations gave unstintingly of himself to a civic enterprise on a scale that most would regard as too heavy a drain on their time, resources, and strength.

A graduate of George Washington University, Washington, D.C., class of 1910, with an LL.B. degree, Mr. Dallwig for some years practiced his profession of law, but later he became interested in other business.

A memorial service was held on Sunday, May 29, in the Museum Lecture Hall where Mr. Dallwig had been heard by so many thousands of people. The service was conducted by Colonel Clifford C. Gregg, Director of the Museum. Dr. Preston Bradley, pastor of the People's Church of Chicago, delivered the memorial address. John R. Hastie, Jr., spoke on behalf of Mr. Dallwig's colleagues in the insurance field.

The Museum acknowledges a great debt to Paul George Dallwig. It is unlikely that anyone ever again will render it a service so completely unique.

THIS MONTH'S COVER

"The Landing of the Explorers" is the title of our cover photograph. The quest of adventure and knowledge for hundreds of thousands of youngsters every year begins when they go through the Museum portals into Stanley Field Hall. Thence they disperse on their varied expeditions into every part of the world, which has been shrunk to easily travelable proportions for them by the exhibits in this building. They hunt wild animals, mingle with Indian tribes, delve into the far past of the cavemen, probe mysteries of ancient Babylon and Egypt, and survey the Plant and Mineral Kingdoms. This cover photograph introduces a story in pictures illustrating the variety of children's activities during a single day at the Museum (see pages 4 and 5). The camera work is by Homer V. Holdren of the Museum's Division of Photography.

GIFTS TO THE MUSEUM

Following is a list of the principal gifts received during the past month:

Department of Anthropology:

From: Ralph H. Churchill, Chicago—copper knife or spear blade, Illinois; Mrs. Frank Clingan, Detroit—African musical instrument, Nigeria

Department of Botany:

From: Chef du Service de l'Agriculture du l'Oubangui-Chari, French Equatorial Africa—9 seed samples; Department of Agriculture, New Zealand—13 seed samples; Ministry of Agriculture, Sudan—18 seed samples; Dr. J. Soukup, Lima, Peru—35 Peruvian plants; Waite Agricultural Research Institute, Adelaide, South Australia—38 seed samples

Department of Geology:

From: H. G. Rose, Hinsdale, Ill.—piece of petrified tree, Arizona; University of Chicago—mammals from Miocene, Pliocene, and Pleistocene, Montana; A. M. Jackley, Pierre, S.D.—casts of pelecypod borings in fossil wood

Department of Zoology:

From: American Museum of Natural History, New York—14 paratypes of 13 species of scarabaeidae, Mexico; Ismael Ceballos B., Cuzco, Peru—non-marine shells, 11 mammals; Dr. John R. Hendrickson, Malaya—125 fishes; Harry Hoogstraal, Cairo, Egypt—reprints of papers on insects; N. L. H. Krauss, Honolulu—12 Gyrinid water beetles, Fiji; M. de Souza Lopes, Rio de Janeiro—4 lots of non-marine shells; T. Pain, London—non-marine shells, South America; Dr. John G. Williams, East Africa—9 birdskins

IN QUEST OF RUSSELIA, THE CORAL PLANT

By MARGERY C. CARLSON

Dr. Carlson, Associate Professor of Botany at Northwestern University, is also Associate in Botany on the Museum staff. Her earlier expeditions had as their purpose collecting as many kinds of plants as possible in (1) the mountains of El Salvador; (2) a lake region in the southern part of the state of Chiapas, Mexico; and (3) the cloud forests of Honduras. All collections from these and her fourth expedition are deposited in the herbarium of the Museum.

WANDERING AROUND in Mexico and Central America in search of plants is a most pleasant occupation, although the preparation of the collections may be a bit arduous. I returned recently from my fourth expedition, on which I tracked down the species of a certain genus of plants, Russelia. I wanted to find the places where

SOUTH-OF-THE-BORDER TREASURE

Botanist Margery C. Carlson in the field with some packs of specimens she collected on expedition.

they had first been collected, see their mode of growth, and record their distribution.

The genus Russelia of the snapdragon family, based on plants collected near Havana, Cuba, was established in 1763. It was named for an English naturalist, Alexander Russell. The first plants grown in England from seeds were collected near Veracruz, Mexico, and quickly became popular as greenhouse plants. The plants make a beautiful show in hanging baskets because of their pendulous habit. Some forty species have been named; but the genus has never been studied thoroughly, the keys for identifying the species are inadequate, and the names of some species are confused.

CRIMSON FLOWERS

The species of Russelia are shrubby or vine-like plants with conspicuous clusters of pretty crimson flowers. Several species are grown as garden flowers in southern Florida and California, but they are not hardy in areas where the temperature falls to freezing. Their native home is Mexico, Central America, and the West Indies.

Kate Staley, my companion, and I left on December 15, 1954, for three and one-half months. We packed our car with equipment for preserving the plants (pressing frames, old newspapers, pressing blotters, and four kerosene lanterns for drying them) and with notebooks, medicines, shovel, tow cable, machéte, ax, sleeping bags, gasoline stove, cooking utensils, and cans of kerosene and gasoline.

In preparation for the trip, I had marked on blank maps all the places where Russelia had been collected—one map for each species. From these I had planned the route. Many of the collections had been made along the highways; so the trip was not as exciting as those into wild areas where no collector has worked previously.

CANYONS EXPLORED

I was surprised, however, to discover into what remote places some of the earlier collectors had gone. In 1906, for example, C. G. Pringle had collected *Russelia pringlei* in Iguala Canyon. We went to Iguala, Mexico, but no canyon is evident from the town, which lies in a broad, flat valley. We reached the canyon by driving to a village north of Iguala, where we left the car and walked five miles along the railroad track that enters the village over a trestle seventy-five feet high. In the canyon we found Pringle's Russelia, as well as many other interesting plants, such as agaves, echeverias, and pincushion cactus.

While visiting with Mexican friends who are interested in our work, we often learned of good places for plant collecting, even in the vicinity of cities. Such places would be difficult, if not impossible, to find without such information, and they usually yield valuable collections because they are not disturbed by cultivation or by grazing. Such was the case when we visited two canyons in the vicinity of Monterrey: Huasteco Canyon and Canyon de la Boca. These have gravelly canyon floors where the native people have made tracks with their ox-carts. By following these tracks with the car, we were able to penetrate deeper than would have been possible by foot in the time available. In both canyons we found Russelia and other plants.

A friend in Valle de Bravo told us about Canyon del Diablo, about ten miles down the road. This canyon was not accessible by car, but our friend "lent" us her gardener, who knew the trail that entered the canyon. Although the trail was difficult, we were able to make our way down the almost perpendicular wall to the bottom. Here, again, collecting was excellent and especially interesting because we found several orchid species on the rocks and on the branches of the trees.

Another good collecting place was San Miguel Regla, near Pachuca, Mexico. In

(*Continued on page 8, column 1*)

EXHIBIT OF GEM CRAFTS HERE DURING JUNE

ON DISPLAY this month in Stanley Field Hall of the Museum is a wide assortment of objects including rings, earrings, bookends, and ashtrays, as well as valuable gems and jewels. These are not artifacts in the Museum's collections from Melanesia, Africa, or Egypt, but prize-winning amateur creations from Chicago and suburbs entered in the Chicago Lapidary Club's Fifth Annual Amateur Handcrafted Gem and Jewelry Competitive Exhibition.

This competitive show, which fosters creativeness in a specialized art, is held every year at Chicago Natural History Museum from June 1 through June 30. This year the show attracted unusually strong competition from all parts of Chicago and from suburban communities within a fifty-mile radius.

RIBBONS, MEDALS, TROPHIES

The show is divided into two classifications —novice (up to two years' experience) and advanced. Fifty-seven ribbons, eight medals, and eleven trophies were awarded this year's winners, including the Dalzell trophy for "Best of Show," the President's trophy for outstanding lapidary craftsmanship, and the Directors' trophy for outstanding jewelry.

Entries in both novice and advanced classifications competed in the following craft divisions: (1) individual gems, cabochon; (2) individual gems, faceted; (2) specific gem collections; (4) general gem collec-

'PORTRAIT IN GEMS'

Composed wholly of gem materials, this picture of butterflies and daisies is the creation of J. Lester Cunningham, of Chicago. It is an entry in the Chicago Lapidary Club's competitive exhibit of gem crafts at the Museum June 1 to 30

tions; (5) individual jewelry; (6) jewelry sets; (7) jewelry collections; (8) special pieces; (9) polished-slab collections (10) polished-specimen collections; (11) enameled jewelry; (12) enameled special pieces. Many of the amateur craftsmen received instruc-

(*Continued on page 6, column 1*)

YOUTH GOES FOR SCIENCE . . .

ALL IN A DAY AT THE MUSEUM—These photographs show varied activities for children during a single recent Saturday morning at Chicago Natural History Museum. There were: a Science Fair in which upper-elementary and high-school pupils displayed in Stanley Field Hall exhibits of their own creation, an "expedition" by Brownies (youngest division of Girl Scouts), and a puppet show in James Simpson Theatre.

SCIENCE FAIR—Regular Museum exhibits in Stanley Field Hall give way for a day to creations of pupils in upper elementary grades and students in high schools of city and suburbs. Show was sponsored by the Chicago Teachers Science Foundation.

AN ALL-TIME RECORD for children's activities was achieved in April by the Raymond Foundation, which, besides theatre shows, school extension-lectures, and other programs, conducted 8,348 youngsters in 160 school groups on tours of Museum exhibits. At press time, indications are that the record may be equaled or excelled in May.

THE ONCOMING SUMMER MONTHS will bring thousands of children, too. These will include, in addition to the throngs that come independently, many play groups, day-camp units, clubs, nature-study and Indian-lore students, Boy Scouts, Girl Scouts, YMCA's, etc.

ON THE FOUR THURSDAYS in July and the first two in August the Summer Series of Children's Movies in James Simpson Theatre (10 a.m. and 11 a.m.) will bring about 2,000 children for each show. A special "journey" in the young Museum Travelers Series may be taken any day in July or August by individual children or groups. Parents are invited to use the Museum as a safe haven for children any day (9 a.m. to 6 p.m.) during the long summer vacation from school.

FUTURE ASTRONOMER—Robert Liska, of Gross School, Brookfield, demonstrates reflecting telescope he built. It works, too.

JUNIOR PALEONTOLOGIST—Models of dinosaurs are displayed by Joanne Werner of Pershing School, Berwyn.

STAR-GAZING—Cecily Resnick (right), of Whittier School, Oak Park, demonstrates miniature planetarium to visitors.

EXPEDITION ORDERS—Edith Fleming of Raymond Foundation staff issues guide-sheets to Brownie Girl Scout explorers.

"CAMP IN CHINA"—Brownies halt "expedition" temporarily at study site among Oriental exhibits to listen to "directives" from their adult Girl Scout troop leaders. Through the magic of Museum collections they are enabled to explore Africa, too, in one day.

The Juvenile Picture in Perspective . . . These Youngsters Are Not a Problem They Seek and SOLVE Problems!

ALL LARGE GROUPS and organizations of young people are welcome in the Museum at all times. When desired, special tours, programs, or series of programs will be planned for them by consultation in advance with members of the staff of the James Nelson and Anna Louise Raymond Foundation.

SATURDAY AUDIENCE at puppet show, one of the series of free programs provided by Raymond Foundation in the the James Simpson Theatre. Children and a few accompanying adults all register delight at performance. A new series of programs comes in July and August.

ON-STAGE RECEPTION—Puppeteer Basil Milovsoroff shows lingering members of audience how his "cast" does its act.

SPECIAL EXHIBIT OF GEMS

(*Continued from page 3*)

tion in gem-cutting and jewelry-making in classes offered in field houses throughout the small parks of the Chicago Park District. Awards for this year's event were made at the Hamilton Park Field House from May 20 through 22.

TIME, PATIENCE, SKILL

A piece of rough gem material that appears to be nothing more than an ordinary rock takes hours of time, patience, and skill for transformation into a striking cabochon. Many of the "rockhounds" who entered the contest are expert metal craftsmen, too, and work as competently in gold as they do in sterling silver or copper. Although many of the contestants have had only a few years' experience and little or no formal training in design, their jewelry creations aptly follow traditional patterns and extend to modern and ultramodern motifs.

Rockhounds gather their gem material from all over the world. Included in this year's show are malachite from the Belgian Congo, opal from Australia, tiger-eye from Africa, sunstone from Norway, banded agate from Brazil, and jade from Burma and New Zealand.

WHAT IS A CARAT?

By J. LESTER CUNNINGHAM
CHICAGO LAPIDARY CLUB

While everyone knows that a carat is a measure of weight for gems, few people have any conception of its relationship to such familiar measures of weight as an ounce or a pound. Even most of the "rockhounds," who this month have their annual exhibit of amateur handcrafted gems and jewelry in Stanley Field Hall of the Museum, apparently have only the vaguest notion. To clarify the matter for them, Mr. Cunningham, a director and past president of the Chicago Lapidary Club, prepared an article that is to appear in the June issue of the Lapidary Journal, national monthly magazine for gem hobbyists. The BULLETIN *is publishing the following abstract because of the subject's interest to others, since almost everybody possesses some jewelry and at times uses the term carat with scarcely any idea of what it means. Mr. Cunningham tells how to get the actual "feel" of a single carat.*

WHAT IS A CARAT? How much is a gram? At 10 cents a carat for rough gem material what is the price for an ounce? At 50 cents a gram, how much do you pay for a pound?

If weighty questions like these puzzle you, you have lots of company. Books on lapidary subjects don't give the answers. And I've never found a single gem "expert" who can easily tell me what gem weights are all about in terms I can readily comprehend and put to everyday use.

I finally decided to see if I could devise a simple and practical table of gem weights and comparisons that an amateur could readily understand. Several months of searching showed why there is such a scarcity of published material—there are too many complex variations between the different systems of weight and too many complications in making workable comparisons. Eventually I solved the problem to my own satisfaction by trial and error experimentation. By a highly unacademic approach I evolved a system that's surprisingly simple to understand and use, and it doesn't require a master's degree in mathematics as a prerequisite.

In presenting the system I must emphasize that all comparative weights are necessarily approximations—however, they're very close and suitable for most practical purposes. The specific weights in each example were arrived at by carefully weighing from five to forty samples in each case and computing the average.

DEFINITION OF TERMS

First we will define terms. Our starting point is a typical, average diamond engagement ring. Chances are you gave one, or have one that was given to you, or have examined dozens worn by your friends. The unit of weight for diamonds and for emeralds, rubies, sapphires, opals, and some other gems is the metric *carat*, adopted as standard for the United States in 1913. A carat consists of 100 *points*, the term used to express fractions. Thus, if a diamond weighs ¾ of a carat it is described as weighing 75 points. The next unit is the *gram*. It is simply 5 carats, and thus it contains 500 points.

The weight significance of points, carats, and grams is made easier to understand by associating them in relationship to the ounce and pound, our most commonly used units of weight, as in the following table:

TABLE OF APPROXIMATE COMPARATIVE GEM WEIGHTS

Unit		*Grams*	*Carats*	*Points*
1 Carat	=	1/5	1.00	100
1 Gram	=	1.00	5.00	500
1 Ounce	=	28.35	141.75	14,175
1 Pound	=	453.60	2268.00	226,800

You'll notice that our familiar ounce contains 28.35 grams. Thus a gram is only a trifle more than 1.28th of an ounce. How relatively little weight a carat represents is revealed by the fact that 141.75 carats are required to total an ounce, and the number of points in an ounce is 14,175. Thus the point unit is only the weight of a small sliver of a split hair. Or, going to the pound comparison, a pound contains 2,268 carats or more than a quarter of a million points. Thus it turns out that gem material in the rough at 10 cents a carat costs $14.17 an ounce. At 50 cents a gram, with 453.60 grams in a pound, the pound cost is $226.80. A one-carat diamond in an engagement ring may cost $500, in which case, on a pound basis, a pound of diamond would cost $1,134,000!

TANGIBLE COMPARISON UNITS

While our table makes far more understandable the actual weight significance of the point, carat, and gram in terms of numerical relationship with the ounce and pound, it leaves lacking the "feel" of how much actual physical weight is represented by each of the three gem-measuring units. I decided to find some universally common object that weighed one pound and then seek similar examples for the ounce, gram, and carat. But this turned out to be a chore of no small dimensions. In all, I test-weighed 239 different items, from 5 to 40 of each, to get typical average weights. I finally found weight examples for four of the five weight denominations involved. Each is commonplace and each is highly practical for making weight comparisons. These examples are not recommended where laboratory exactness is required but are intended only for a simple easy-to-grasp understanding of the weight significance of the various units.

It is surprisingly difficult to find some ordinary object with wide accessibility that weighs one pound. I rejected the obvious pound of butter or coffee because of variations in packing each brand. I expected to find my example among carbonated-beverages, but a full bottle of a popular cola drink weighs about 1¼ pounds and the empty bottle only ¾ of a pound. The same weights

occurred in another soft drink. I eventually found what I was looking for: the 12-fluid-ounce cans (ice cold) of a certain brand of beer proved to have a consistently maintained average weight of one pound.

For commonplace weight examples of the ounce and for usable multiple units of the gram, carat, and point, I was disappointed to find U.S. coins valueless.

CIGARETTE A GUIDE

Eventually after weighing about everything in sight, including candy bars, paper clips, aspirin tablets, jewelers' saws, and chewing gum, I put a fresh unopened package of a certain brand of cigarettes on

the scale. It weighed only a whisker less than one ounce. Furthermore, the individual cigarettes (regular, not king size) turned out to be an excellent weight example for a gram each. While there is some infinitesimally slight variation, it is negligible, and the cigarettes run close enough to consider one of them equal to one gram (or 5 carats, or 500 points).

My weight example for one carat is even more unconventional. Take a full standard-size package of book-matches. Tear out two matches and light each one. The instant the momentary flareup ends, blow out the flame. The weight of what remains of the two matches is approximately one carat. You will hardly be conscious of their insignificant weight in your hand, but when you recall that 2,268 of these carats equal a pound — and in diamonds at $500 a carat, the value of a pound would be more than one million one hundred thousand dollars—their weight reacquires significance.

EXPEDITION RESUMES NEW MEXICO 'DIG'

By PAUL S. MARTIN

CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

THE 1955 SOUTHWEST Archaeological Expedition will start work in New Mexico in June. We had halfway planned on pulling up stakes this year to follow the ancient trek of the Mogollon Indians whose history we have been unearthing for the past eleven years. Several reasons, partly budgetary and partly archaeological, made it seem wiser to remain this season in our present camp. The archaeological reason is that new evidence turned up during the winter.

But, as the radio and TV announcers say, "First a word of explanation."

HOUSING EVOLUTION

During the past eleven years we have dug 126 rooms and pit-houses and seven caves. From this extensive digging we have traced the prehistory of the Mogollon Indians from about 2500 B.C. to about A.D. 1050. One interesting architectural item that had cropped up was the evolution of houses. We were under the impression that the pit-house was in vogue from about 2500 B.C. to about A.D. 900 and that it had then been entirely replaced by surface houses with several contiguous rooms and walls of stone masonry.

During the winter a highway salvage-program directed by Dr. Fred C. Wendorf, under the auspices of the New Mexico State Highway Department, the U.S. Bureau of Public Roads, the U.S. Department of the Interior, and the Museum of New Mexico, excavated a site on the right-of-way of the new road from Apache Creek to Reserve, New Mexico. Bulldozers and mechanical equipment uncovered seven subterranean structures that were certainly built after A.D. 900. These structures, which were roughly 12 by 14 feet and about 8 feet deep, were equipped with ventilators, fire-pits, foot drums, cornmeal grinding bins, and other household equipment. They may have been kiva pit-houses. This possible dual function is a question that is yet to be resolved.

But the salient point of interest is the fact that here are kiva pit-houses persisting into late times (long after we thought they had gone out of style) and probably flourishing simultaneously alongside the multiroomed surface houses. Here, then, appears to be an example of "conservatives" versus "liberals." The former may have doggedly clung to the old-type Mogollon pit-house in preference to the new-fangled surface houses imported from strange people (about 100 miles away!) and liked by the "liberals."

WILL SEEK ARCHITECTURAL LINKS

We don't know that these were the cultural factors operating in that distant time, but we feel that it is imperative to find out more about this subject. We also must search for the connecting architectural links between the kiva pit-houses of A.D. 900 and those found last winter. This is something we may have missed.

But the strongest archaeological reason for pursuing our Mogollon studies in the Pine Lawn Reserve area a little further is that we want to find the last Mogollon stronghold from which these people left for other areas. We need this vital clue to help us determine the cause for their exodus. We have fairly good hunches as to *where* they went but no idea as to *why*.

NEW MEMBERS

(April 16 to May 13)

Non-Resident Life Member

Mrs. Lydia C. Weaver

Associate Members

William L. English, Marshall E. Strauss, Miss Elizabeth Van Hagen, J. L. Vette, Mrs. Elmer K. Zitzewitz

Non-Resident Associate Member

Kenneth A. Hagerty

Annual Members

William J. Ahlfeld, Robert C. Baker, Dr. David G. Berens, Mrs. Rose B. Cohn, Harold Harlow Corbin, Jr., Miss Florence Deneen, Eugene V. Diggins, Thomas Elver, Irving D. Fasman, Miss Helen Flaherty, Paul Grant, Mrs. George L. Green, W. S. Heberling, John W. Hill, Rolwood R. Hill, Milton E. Hyde, Julius C. Jaffe, R. A. Jarecki, William Katz, H. L. Littig, Raymond G. Lonnon, Stephen A. Malato, Simeon K. Markman, John S. Osborne, Dr. Harold Ovenu, William O. Petersen, C. Truman Redfield, Mrs. Oron E. Richards, Walter B. Scott, Paul W. Stokesberry, Dr. Ira J. Tresley, Mrs. Joseph L. Valentine, Rudolph A. Vasalle, Arthur L. Waldner, Donald H. Wallingford, Arthur G. Weeks, Sam Winston

Television Programs Feature Museum Staff Member

The Museum has recently received especially effective notice on television through the frequent personal appearances of John W. Moyer, head of the institution's Division of Motion Pictures. Mr. Moyer's TV engagements present him in "live" lectures of a half-hour duration, accompanied by the showing of parts of a film, "Shikar in India," that he made during his recent leave of absence for a U. S. government mission in India. Mr. Moyer was featured on "The Great Outdoors" program on May 13 (WGN-TV, Chicago) and on the "Sportsman's Holiday" program on Detroit's WWJ-TV (CBS) on May 25 and 26. He has also recently talked before the Adventurers' Club, the Campfire Club, and other organizations here and elsewhere.

STAFF NOTES

In recognition of his many services to the Chicago Lapidary Club, **John R. Millar,** Deputy Director of the Museum, was presented with an honorary life-membership at the club's May meeting .... **Rupert L. Wenzel,** Curator of Insects, recently attended a meeting of entomologists in Washington, D.C. He also studied the histerid beetle collections in museums of the East and Canada .... **Henry S. Dybas,** Associate Curator of Insects, accompanied by **Alex K. Wyatt,** Research Associate in Insects, will leave early in June on an entomological trip to Georgia and northern Florida .... **Luis de la Torre,** Associate in the Division of Mammals, has been named a Fellow in Mammalogy under the terms of the Thomas J. Dee Fellowship .... **Dr. Paul S. Martin,** Chief Curator of Anthropology, **Dr. Donald Collier,** Curator of South American Archaeology and Ethnology, **George I. Quimby,** Curator of North American Archaeology and Ethnology, **Dr. John B. Rinaldo,** Assistant Curator of Archaeology, and **Miss Elaine Bluhm,** Assistant in Archaeology, attended the annual meetings of the Society for American Archaeology and the Central States Anthropological Society at Bloomington, Indiana, in May, where Curator Quimby and Miss Bluhm presented papers. Curator Collier was program chairman for CSAS and Chief Curator Martin was elected to the executive committee of SAA .... **Roger T. Grange,** Assistant in Anthropology, recently talked on "Archaeology of the Plains" before the Earth Science Club of Northern Illinois at Downers Grove .... **Dr. Julian A. Steyermark,** Curator of the Phanerogamic Herbarium, lectured on botanical subjects before the Ravinia Garden Club and the Countryside Garden Class of Barrington.

QUEST OF CORAL PLANT

(*Continued from page 3*)

the old days it was a hacienda that was used principally for preparing silver ore. Now it has been restored as a club for professional people. Most members go there for recreation, especially swimming and horseback riding. A ravine, through which the water from springs flows, here and there widens out into lakes and supports a lush vegetation.

CLIFF DWELLERS, TOO

We soon learned that Russelia "likes" to grow on cliffs and in little arroyos as well as in canyons, and therefore we stopped on the highway to climb every cliff and to explore every little valley where the streambed carries off the water from the heights during the rainy season. It is not surprising that on some days we traveled only fifty miles

Many of the early collectors of Russelia had indicated on their specimens that the plant had been collected "near" a certain town. In such cases, our ingenuity was taxed to find the plant. But in other cases, the collectors had indicated the locale by the kilometer mark on the highway (Mexico marks its highways with the number of kilometers distant from the capital). We often had the thrill of finding a certain species still flourishing in the same place where it had grown many years ago.

In Oaxaca we heard that work was being done on the worst parts of an old road over the Sierra Madre mountains, between Miahuatlan and the Pacific coast. This would open up "new" country, that is, country not accessible except to the most vigorous collectors. We rented a jeep for the trip and drove the fifty miles to Miahuatlan over a fairly good road in three hours. From there to the coast, another fifty miles, the road crosses the mountains over a pass at an elevation of 10,000 feet. This part of the trip required two days. Progress was slow because of the poor road and the abundance of plants to collect.

On a trip such as this, one has either to camp or depend on the generosity of the few inhabitants. We stayed on coffee fincas in the mountains and in homes in the villages. In the village of Candalaria, a family gave us one room of its two-room house. Whenever we stopped at a native hut for a meal, we would go collecting while the food was being prepared.

We spent our last month in El Salvador and Honduras. Time did not permit driving, as we had done on our former trip, and so we left the car in Mexico City and went by plane. In El Salvador we revisited the northwest part of the country where we had collected in 1946, and again we made our headquarters at the hacienda San Miguel. What memories this visit brought back of our first experiences with plant collecting!

In Honduras we had great hopes for our plant collecting at Guaimaca, where we were to visit friends on their large ranch, but the season was unusually dry and we found comparatively few plants in bloom. We decided, therefore, to use the remaining time for going cross-country to the north coast to locate good collecting places for a possible return trip in a better season.

THE ACCOMMODATING BUS

We wanted to visit Lancetilla in Tela on the north coast, the experimental botanical gardens of the United Fruit Company about which Paul C. Standley, Curator Emeritus

PRIME OBJECT OF THE SEARCH

Russelia, vine-like plant with clusters of crimson flowers, collected in Mexico by Dr. Carlson to complete her monograph. Illustration reproduced from Curtis's Botanical Magazine of 1813.

of the Museum's phanerogamic herbarium, has written *Flora of the Lancetilla Valley.* Since travel in Honduras has advanced in one jump from the horseback to the airplane stage, the roads are few and poor and transportation by road is primitive and erratic. However, we located a bus—a cargo truck with boards for seats across half of it—that took us northward along the shore of Lake Yojoa to the town of Potrerillos, where, we were told, we could get a train to Tela. We sat in front with the driver, who stopped to practice his marksmanship with his rifle whenever he saw a hawk and whenever I wanted to collect a plant or take a picture.

The trip to Potrerillos took a day and a half. Here we discovered that there would be no train until "next week." We learned of a bus that would take us to San Pedro Sula, from where we could "surely get a train to Tela." But there was no train to Tela from San Pedro and, since there are no roads from there to the coast, we were reduced to using the modern way of transportation in Honduras. We took an air-taxi and arrived in Tela in twenty minutes. The trip home, by plane to Mexico City and from there by auto, was uneventful.

On the basis of my collecting experiences and field observations, I now hope to complete my monograph on Russelia. Perhaps I should explain what is involved in such work. According to long-established practice, I read all published descriptions and accounts of the plants, most of them in Latin. Then I studied and compared all specimens of the genus available in major herbaria. After that, I was ready to study the plants in the field and make large collections of each species to determine the variations. Now I am able to decide which of the named species are good, select their legitimate names, prepare adequate descriptions, make a key by which they can be identified, and map their distribution.

'MECCA' CAVES IN

On a recent visit to complete mapping the black-shale quarry near Mecca, Indiana, Dr. Rainer Zangerl, Curator of Fossil Reptiles, and Dr. Eugene S. Richardson, Jr., Curator of Fossil Invertebrates, found that the headwall of the quarry had slumped in during the winter, covering the quarry floor with as much as four feet of mud and vegetation. They report that freezing and thawing proved too much for the headwall, which they had opened up last year by cutting a ten-foot cliff in shale and soil to expose the Pennsylvanian (Coal Age) shale containing the many tiny fossils they sought. Fortunately, in anticipation of just such an occurrence, they had removed during the 1954 season all the shale needed for their work, so that the "Mecca Project" at the Museum is in no way interrupted. This project has attracted much attention in the geological profession, and several parties from other institutions visited the site during the period of excavation.

"Highlights Tours" Offered Daily

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays by advance request.

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Chicago Natural History Museum

Chicago Natural History Museum

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Lake Shore Drive, Chicago 5

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Members are requested to inform the Museum promptly of changes of address.

DR. KARL SCHMIDT RETIRES; GOES ON WITH RESEARCH

ONE OF THE MUSEUM'S most eminent scientists, Dr. Karl P. Schmidt, Chief Curator of the Department of Zoology, has reached retirement age and will surrender control of his department effective July 1. The Museum as an institution and his colleagues on the staff are happy that he will remain as Curator Emeritus of Zoology and will occupy a laboratory in which he will devote himself to research, relieved of the details of departmental administration.

Dr. Schmidt is not only one of the all-time "stars" associated with the scientific achievements of this Museum, but he is also universally recognized as one of the top-ranking biologists of America.

His service to Chicago Natural History Museum covers a span of thirty-three years. After graduating from Cornell University, he was on the staff of the American Museum of Natural History, New York, from 1916 to 1922 as research assistant and assistant curator of herpetology. In 1922 he came to Chicago to accept an appointment as Assistant Curator of Reptiles at this Museum, where he became Curator of Reptiles and Amphibians in 1937 and Chief Curator of the Department of Zoology in 1941. He attained an international reputation as one of the foremost authorities in his special field of reptiles and amphibians, but he has as well an amazingly broad background in all phases of zoology and biology and in geology and anthropology. His major expeditions for this Museum are the Marshall Field Expeditions to Central America (in 1923) and to Brazil (in 1926), the Cornelius Crane Pacific Expedition (1928–29), and the Magellanic Expedition to lower South America (1939–40). His field work has taken him to the West Indies, Mexico, New Zealand, and Israel. In addition to the long list of technical books and papers that he has published he is author of a number of popular books for laymen and for children. He has also been an editor of several scientific periodicals.

SALUTED IN BOOK

As a special honor, the Museum published on his birthday, June 19, under the title *Karl Patterson Schmidt—Anniversary Volume in Honor of His Sixty-fifth Birthday*, a book of 728 pages, containing not only personal tributes but also a symposium of twenty-five technical papers on a wide variety of scientific subjects by fellow staff-members. Such a volume is a traditional form of tribute used by scientists to express their recognition of an eminent colleague. The book is the second of its kind to be published by this Museum, the first having been dedicated in 1941 to Dr. Schmidt's predecessor, the late Dr. Wilfred Hudson Osgood, at the time of his retirement.

Arizona Daily Star photo by Bernie Roth

RETIRES—CONTINUES WORK

Dr. Karl P. Schmidt (right), Chief Curator of Zoology, will lay down reins of department supervision July 1, but he was in the field collecting reptiles in the Southwest and Mexico as recently as June. Shown with him is D. Dwight Davis, Curator of Vertebrate Anatomy. Dr. Schmidt will remain at the Museum for full-time research work.

The present volume opens with an encomium on the work of Dr. Schmidt by Stanley Field, President of the Museum. Mr. Field outlines the high points of Dr. Schmidt's long career at the Museum — his expeditions to practically all parts of the world, his contributions to ecology, zoogeography, taxonomy, and zoological literature, and his discoveries of many new genera and species. The general characterization of Dr. Schmidt, sensed by all who know him, is summed up by Mr. Field in one paragraph: "A museum zoologist is a naturalist, and the hallmark of a naturalist is breadth of background and interest. One of the unfortunate results of increasing knowledge is increasing specialization, which often leads to stultifying narrowness of thinking and dangerous narrowness of interpretation, in science as in all other human activities. Certainly one of the primary responsibilities of a natural history museum, and of the men who staff it, is to maintain the broad perspective of nature as a whole that is now so often missing from the science departments of our colleges and universities. Dr. Schmidt exemplifies to a high degree the breadth of interest and experience that characterizes the true naturalist."

TRIBUTE TO PERSONAL QUALITIES

In another prefatory note, Colonel Clifford C. Gregg, Director of the Museum, points out that beyond Dr. Schmidt's attainments in exploration and research, he deserves a special tribute for his kindness, gentleness, and helpfulness to others. "At the Museum, Karl Schmidt, perhaps more than any other scientist on the staff, has interested himself in the training of young men and women for scientific careers," writes Colonel Gregg. "Quite a number of persons have become zoologists or specialists in fields related to zoology through his interest and advice. Many more, while pursuing careers in other lines, have maintained a deep interest in zoology as an avocation."

Colonel Gregg concludes his preface in these words: "My own personal appreciation of Dr. Schmidt [in a friendship of more than twenty-nine years] is perhaps best evidenced by the many informal conferences I have held with him on matters in no way concerned with his official duties as Chief Curator of the Department of Zoology. His broad understanding, his knowledge of

(Continued on page 6, column 1)

THIS MONTH'S COVER

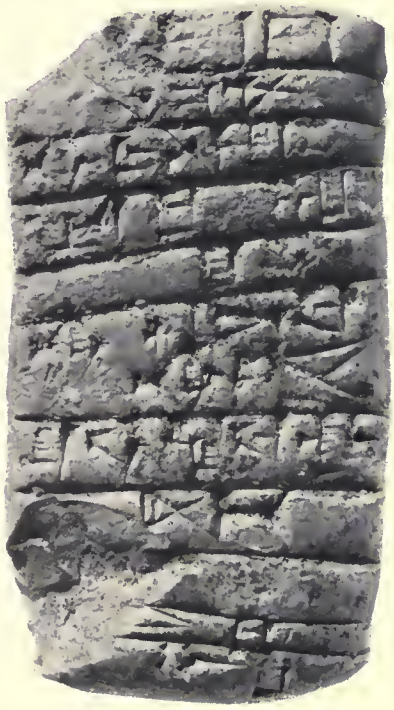
The large, rare jar of jade shown on our cover will go on exhibition in Stanley Field Hall on July 1. More than 30 inches tall and weighing 283 pounds, it is a choice example of 18th century art in the reign of Emperor Ch'ien-lung (1736–96). The jar is being presented to the Museum by Mr. and Mrs. Julius J. Bensabott, of Chicago (see account on page 5).

4,000-YEAR-OLD TABLETS BROUGHT TO LIGHT

By I. J. GELB
PROFESSOR OF ASSYRIOLOGY, ORIENTAL INSTITUTE, UNIVERSITY OF CHICAGO

IT IS AN OLD and well-known story that, like the ancient buried cities of the Near East, our modern museums are fertile soil for the would-be discoverer of antiquities. Dug up from their ancient resting places and shipped along with a host of other objects to a museum, valuable items are sometimes stored away and forgotten for years until a lucky stroke of fortune brings them to light again.

The rediscovery of the now famous Babylonian Chronicle telling of the fall of Nineveh is a case in point. Excavated and



EXAMPLE OF AKKADIAN WRITING

The cuneiform inscription on this particular clay tablet in the Museum collection consists of disconnected words and is believed to have been a vocabulary exercise of a school child who lived more than 4,000 years ago in Mesopotamia.

brought to the British Museum in London toward the end of the last century, it lay hidden and unrecognized for years before it was finally brought out of its oblivion and published in 1923. Immediately it became evident that this long-lost document was of fundamental importance for the correct understanding of the historical events in the last days of the Assyrian Empire.

A similar discovery, though not of such epoch-making proportions, has been made in Chicago Natural History Museum. Shortly after World War I the late Lieutenant-Colonel J. H. Patterson, D. S. O., British Army of Occupation in Iraq, purchased a collection of cuneiform tablets from an Arab at Babylon and presented them to the Museum. There they remained unrecognized until they were rediscovered years later by Richard A. Martin, then Curator of Near Eastern Archaeology, who requested me to investigate the collection.

There has never been any question about the importance of the collection. The tablets are inscribed in a dialect of the Old Akkadian language and date back more than four thousand years, almost to the very beginning of written history in Mesopotamia. Their importance is immediately apparent from several points of view.

These texts are a most important source of material for the study of the oldest Akkadian dialect. Since Akkadian (also known as Assyro-Babylonian), like Hebrew or Arabic, belongs to the Semitic group of languages, the new texts provide us with the oldest known materials in the whole field of Semitics. Important, also, is that the many personal names mentioned in the texts help in the reconstruction of the ethnic background of the area in which the tablets originated. However, the importance of the collection is not limited to the ethnolinguistic sphere. Containing as it does a respectable number of legal, business, and administrative texts, the material sheds new and important light on the rise and development of socioeconomic institutions in the Near East.

LEGAL DOCUMENTS

The most important group of texts in the collection is that of legal documents pertaining to the sale of property. Here is the translation of a typical legal text: "1 Ilirabi the priest, 1 Zuzu, 1 Ilulu, 1 Enanra, 1 Hulium, 1 Ilala, 1 Ea-ili, 1 Dan-ili. Total of 8 witnesses who attested the sale of the house of Mututu to Ilum-asu." The texts are terse and they give neither date nor the size and location of the property. But the transactions are witnessed, making the texts legally binding business documents, in contrast to such other texts in the collection as the one quoted below, which are not witnessed and must therefore be classified as administrative texts or memoranda for private use: "1 female lamb given on loan to Kalis-tab, free of interest. 4 PI [i.e., 240 quarts] of barley given on loan to Isasa [presumably, on interest]." While some of the administrative texts are very short, containing only about five to six lines, the largest text in this group contains 62 lines and had to be subdivided into four columns because of its size.

I wish to express my gratitude to Colonel Clifford C. Gregg, Director of the Museum, for giving me the opportunity to study the collection and for approving its publication by the Museum press, as well as to Dr. Paul S. Martin, Chief Curator of Anthropology, and Miss Lillian A. Ross, Associate Editor, for their kind help in technical matters pertaining to the publication of the monograph.

WHAT MAKES A DOG TICK SHOWN IN EXHIBIT

VESTA, the Transparent Dog—a life-size model of a large Great Dane—will be on exhibition at Chicago Natural History Museum from July 15 to September 15. This special exhibit will be of particular interest to all dog owners, especially young folks. It is of value also as a demonstration of the general anatomy and physiology of mammals, and thus it can give a number of lessons applicable in a broad way to many vertebrate animals including human beings.

Vesta, named for the Roman goddess of the hearth and guardian of the home, is able to tell her own story. She is equipped with a recorded voice that delivers a lecture about the structure of dogs, which varies very little from the tiny Mexican hairless to such giant dogs as the Great Dane itself. Vesta is also equipped with a complex system of electrical mechanisms and controls by means of which the parts of the transparent plastic body can be made to light up as they are referred to in the dog's lecture. Thus attention may be concentrated in turn upon the respiratory and circulatory systems, the brain, and the viscera. One side of the dog shows a detailed reproduction of the muscular system; the opposite side shows the skeleton.

Vesta was built at the Deutsches Gesundheits Museum in Cologne where a staff of naturalists and technicians devoted more than two years to her creation. She was

EXHIBIT TELLS STORY OF DOG

Champion Fury, prize-winning Great Dane, stands beside Vesta, the Transparent Dog that will be shown at the Museum from July 15 to September 15.

made for the Gaines Dog Research Center of New York, under whose auspices she is now touring the United States. Dr. Bruno Gebhard, Director of the Cleveland Health Museum, served as consultant.

Museum Electrician Dies

With regret the Museum records the death on June 9 of Christ Schnur, at the age of 72. Mr. Schnur was an electrician employed in the Museum's Division of Engineering since 1944.

SYNOPTIC DISPLAY OF PERCHING SONGBIRDS

By EMMET R. BLAKE
CURATOR OF BIRDS

A NEW BIRD EXHIBIT recently installed in Boardman Conover Hall (Hall 21) adds twenty bird families to the Museum's synoptic display of the world's avifauna. This exhibit, the second of three designed to illustrate the more conspicuous physical characteristics of the perching songbirds (Passeres), shows representative species of each family, from the parrotbills (Paradoxornithidae) to the palm-chats (Dulidae). The third and last synoptic exhibit devoted to songbirds is nearing completion and will treat the larks through the birds of paradise.

Like its predecessor, the new exhibit utilizes an exhibition technique developed by Dr. Austin L. Rand. This was described in some detail in an earlier BULLETIN (November 1952, pp. 6–8). Briefly, the birds in the exhibit are arranged in systematic order with the various family groups segregated on raised panels or plaques to emphasize their distinguishing characteristics. Two or more closely related families are sometimes displayed on a single panel, but the birds are arranged so as to avoid confusion while permitting ready comparisons. All perches are reduced to mere painted pegs for, in a synoptic series, the birds themselves obviously are of paramount importance.

All exhibits of the synoptic series emphasize family groups, relationships, and physical characters. The specific identity of each bird, although indicated on a label, is considered relatively unimportant in these exhibits. Some small bird-families are represented by a single characteristic species, while a dozen or more species may be needed to illustrate the range of variation in structure, color, and pattern that may be found in a large family of wide distribution. In keeping with the principle of emphasizing family units, both the text labels and distributional maps treat their subjects at family level.

Few of the birds in the new exhibit are strikingly colorful, as were many in the earlier one that featured shrikes, honeyeaters, troupials, tanagers, and various other families of brilliant plumage. Nevertheless, many birds of great interest are shown. There is a dipper, representing a family of but five species, which habitually feeds on the bottoms of swift mountain streams and literally "flies" while under water. The palm-chat, a drab boldly streaked bird of Haiti and nearby Gonave Island in the West Indies, constructs a bulky communal nest in the sides of which several pairs burrow to lay their eggs. These and many other birds with remarkable habits, as well as more commonplace families of birds are shown.

This exhibit was designed by the Division of Birds. Taxidermy is by Carl W. Cotton, art work is by Douglas E. Tibbitts, and maps are by Margaret G. Bradbury.

NEW EXHIBIT OF SONGBIRDS

The arrangement is by families or family groups, with closest relatives together. Uniform poses facilitate comparisons. The perches, reduced to a minimum, lessen distracting elements.

FIELD STUDY COMPLETED

Zoological field studies and collecting in the southwest United States and northern Mexico for 1955 have been completed by Dr. Karl P. Schmidt, retiring Chief Curator of Zoology, D. Dwight Davis, Curator of Vertebrate Anatomy, and Hymen Marx, Assistant in the Division of Reptiles.

Experimental motion picture and still photography under field conditions were undertaken by Curator Davis at the Arizona-Sonora Desert Museum, which maintains a blind for night camera-work. Every courtesy was extended by Director William H. Woodin III. Especially impressive was the collection of living plants and animals of the region maintained as an effective educational tool and as a base for research at levels from observation to complex ecological experiments.

Beaucarnea, a remarkable growth-form of the lily family, was encountered in eastern Mexico, and a specimen has been turned over to Dr. Theodor Just, Chief Curator of Botany, who will discuss it in a future BULLETIN. Schmidt and Davis renewed acquaintance with Big Bend National Park in Texas, where they had participated in the early natural-history surveys of 1937. The Museum party joined Marlin Perkins, Lear Grimmer, and other members of the Lincoln Park Zoo staff in snake and lizard collecting in this park.

The men from the Museum are indebted to Mr. and Mrs. Ellsworth Shaw for their hospitality both in Tucson and at their ranch in northwestern Sonora. Most prophetic of future field work were the studies made at the Shaw ranch and in the dunes along the northeastern shore of the Gulf of California where interesting flora and fauna were observed. This corner of the Mexican state of Sonora seems, in fact, to be one of the least known parts of the Great American Desert. Field studies were made also in Tamaulipas on the Mexican side and in New Mexico.

Plant life, from bacteria to orchids, is summarized by the exhibits in Martin A. and Carrie Ryerson Hall (Hall 29).

RARE JADE FROM CHINA ADDED TO EXHIBITS

By M. KENNETH STARR
CURATOR OF ASIATIC ARCHAEOLOGY AND ETHNOLOGY

THROUGH THE KINDNESS of Mr. and Mrs. Julius J. Bensabott of Chicago, the fine and rare jar shown on the cover of this BULLETIN is being added to the Museum's collection of Chinese jades. The piece is being presented in the name of R. Bensabott.

The jar, which was acquired in Peking, is a choice example of 18th-century Chinese artistic and technical excellence in the working of jade, for it expresses faithfully the aesthetic orientation pervading the long and eminent reign of the emperor Ch'ien-lung (1736–96), whose reign-name is cut into the rim of the vessel. One account of the history of this fine piece, accompanied by a photograph, is given in John Goette's *Jade Lore* (New York [1937], pp. 56–58).

The uncommonly large jar was hand fashioned from a single piece of jade (nephrite), which, to judge from its color, quality, and the preferences characteristic of 18th-century China, most probably had as its source Eastern, or Chinese, Turkestan. Upon seeing the jar, one marks immediately the unusual evenness of the deep green color, the wonderfully smooth finish implicative of countless hours of polishing, and the slightly unctuous luster associated with nephrite of the first quality. With the exception of a minor degree of splintery fracture, largely a manifestation of the foliation intrinsic to the stone, the piece is in excellent condition.

CLASSIC DESIGN

In keeping with the traditionalism common during the general period when the vessel was made, the inspiration for the forceful surface treatment was drawn from the classical period of Chinese culture, for the origin of the design elements may for the most part be found in the symbolism—notably on the ceremonial bronzes—of the Shang and Chou periods, from a time which preceded the Christian era by broadly a millenium. The excellence of the workmanship here is in no way more strikingly communicated than by attention to the sharp manner in which the decorative elements are cut.

The jar is distinguished not only by its quality of stone, superiority of technique, and traditionalism of style, but also by its very size, for it is one of the most imposing pieces of carved jade in the United States. The complete jar stands 30¾ inches high, the maximum diameter of the body is 20⅝ inches, and the thickness of the jar at its waist is about 2½ inches. With its cover, which alone weighs 20 pounds, the jar weighs 283 pounds, the hardwood stand raising the total weight to 305 pounds. The stand itself is a thing of beauty and excellence of craftsmanship, worthy of exhibition on its own merits, for the dense fine-grained wood is inlaid with fine threads of silver that in keeping with the stylistic treatment of the jar delineate a classical motif. The care evidenced in the cutting of the design into the hard wood and the laying in of the silver is manifested by the smooth even flow of the lines in the design.

SPECIAL DISPLAY

The Bensabott jade jar is to be placed as a special exhibit at the north end of Stanley Field hall beginning July 1. Thereafter it will be placed on permanent exhibition in the Jade Room at the south end of the Chinese Gallery (George T. and Frances Gaylord Smith Hall). Here it will enrich the Museum's collection of Chinese jades, a collection long distinguished by its quality, size, and representativeness of the major periods of Chinese jade carving from the end of the second millenium of the pre-Christian era down to the present century.

The presentation of the jade jar is not the first instance of the generosity of Mr. and Mrs. Bensabott, for in former years they have made several other gifts to the Museum. Most notable among them is a finely carved official seal-box of green jade, also dating from the Ch'ien-lung period and at present on exhibition in the Jade Room.

University Honors Director

The honorary degree of Doctor of Science was conferred on Clifford C. Gregg, Director of the Museum, at the annual commencement of Willamette University, Salem, Oregon, on June 5. The award was given in recognition of the pre-eminence of the scientific work of Chicago Natural History Museum and in recognition of the leadership of Director Gregg in the Y.M.C.A. on a nation-wide basis.

Fossil Plants Collected

Several thousand specimens of fossil plants were collected for the Museum on a recent field trip to Alabama and Tennessee by George Langford, Curator of Fossil Plants, and Orville L. Gilpin, Chief Preparator of Fossils. They worked in Upper Cretaceous formations near Tuscaloosa, Alabama, and Hollow Rock, Tennessee.

The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this emotion is a stranger, who can no longer pause to wonder and stand rapt in awe, is as good as dead; his eyes are closed.

—*Albert Einstein*

Of particular interest in the Hall of Fishes (Hall O) are exhibits of the whale shark and devilfish, the largest of the rays.

SUMMER ACTIVITIES FOR JUNIOR SET

Although Chicago schools closed June 24 for the annual summer vacation, the city's school children can continue their education in a vivid and exciting way at Chicago Natural History Museum. The Museum has prepared an active summer program that will entertain Chicago's youth.

A Museum Travelers program during July and August, one of a series of four "journeys" taken during the year, will whisk members of the younger generation daily to China where they will learn about Chinese shadow puppets. They may pick up their "travel instructions" at the Museum entrances.

Every Thursday morning at 10 and 11 o'clock, from July 7 through August 11, free movies for children will be shown (programs are listed on page 8).

Tours of exhibits for both children and adults will be conducted by staff lecturers twice daily (except Saturdays and Sundays) at 11 A.M. and 2 P.M. Special tours of the Museum can be arranged by contacting Miss Miriam Wood, head of the Raymond Foundation.

STAFF NOTES

Dr. R. H. Whitfield, Associate in Fossil Plants, and **Dr. Eugene S. Richardson, Jr.,** Curator of Fossil Invertebrates, lectured jointly before the Braidwood Rotary Club and the Earth Science Club. Curator Richardson and **Dr. Rainer Zangerl,** Curator of Fossil Reptiles, spoke before the micropaleontology class at the University of Illinois, Urbana, and both attended meetings of the Illinois Academy of Science at Carbondale where they presented a paper on the Museum's "Mecca Project." Curator Richardson attended the meetings of the Pennsylvania Academy of Science at Philadelphia . . . . **Henry S. Dybas,** Associate Curator of Insects, has begun summer field collecting and research in Georgia and northern Florida . . . . **Miss Pearl Sonoda,** Assistant in the Division of Fishes, is engaged in a research project at Hopkins Marine Station, which is maintained at Pacific Grove, California, by Leland Stanford University . . . . **Dr. Donald Collier,** Curator of South American Archaeology and Ethnology, participated in a symposium on cultural evolution held at the University of Illinois, Urbana, in June . . . . **Dr. Julian A. Steyermark,** Curator of the Phanerogamic Herbarium, lectured before the Winnetka Garden Club on "Exploring for Plants in Venezuela."

The giant Galapagos turtle may be seen in Albert W. Harris Hall (Hall 18).

SCHMIDT RETIRES—

(*Continued from page 2*)

the literature of his own and allied fields of study, his sincere interest and human sympathy, his genial optimism, and his keen sense of humor have been of invaluable assistance in sweeping away many of the difficult and discouraging problems which find their way into the office of a museum director. I welcome the years ahead in which Karl Schmidt will still be present, not as a Chief Curator burdened with the administrative duties of a great department but as an emeritus research scientist who is free to continue his contribution to science and to humanity, restricted only by the hours in the day and the limits of his own endurance."

A third prefatory note contains a joint tribute by the twenty-eight scientific contributors to the volume, and this is followed by the technical papers themselves based on studies in which many of the contributors have had the welcomed valuable guidance and advice of their retiring Chief Curator. These scientific papers range through all the divisions of the animal kingdom, and geographically they cover fields from Illinois to Brazil, Borneo, and New Caledonia.

RAND HEADS DEPARTMENT; BLAKE PROMOTED

Dr. Austin L. Rand, the Museum's Curator of Birds since 1947, has been appointed Chief Curator of the Department of Zoology to succeed Dr. Karl P. Schmidt, whose retirement is announced elsewhere in this BULLETIN.

Austin L. Rand

Probably no Museum staff writer is quite so familiar to readers of the BULLETIN as Dr. Rand, whose always interesting and often highly amusing intimate stories about birds—from Chicago sparrows to Antarctic penguins—appear with great frequency in these columns. He is also the author of popular books containing similar accounts of the special habits, human-like qualities, and idiosyncrasies of various kinds of birds. But more important is a long list of technical publications based on his extensive research.

Before coming to this Museum, Dr. Rand was associated for about fourteen years with the American Museum of Natural History, New York. In 1942 he joined the staff of the National Museum of Canada, at Ottawa, where he was Acting Chief of the Division of Biology. A Canadian by birth, Dr. Rand is a graduate of Acadia University at Wolfville, Nova Scotia. He earned his Ph.D. at Cornell University. He has conducted zoological expeditions in Madagascar, the southwest Pacific, the United States, Canada, and Central America.

Emmet R. Blake, Associate Curator, will succeed Dr. Rand as Curator of Birds. Blake, who had led expeditions to the West Indies and to Central and South America for the Carnegie Museum of Pittsburgh and the National Geographic Society, first became associated with Chicago Natural History Museum (then Field Museum) in 1931–32 when he was engaged as ornithologist to accompany the Leon Mandel Venezuela Expedition. In 1935 he was appointed to the Museum staff as Assistant Curator of Birds and since 1947 he has been Associate Curator of Birds. His expeditions as a member of the Museum staff have taken him to various Caribbean localities, Mexico, Guatemala, Honduras, Brazil, and the Guianas. He is the author of *Birds of Mexico, A Guide for Field Identification* and of numerous technical papers. During the twenty years in which he has been a staff member of the Museum's Division of Birds, the collections have trebled, increasing from 80,000 to approximately 240,000 specimens. He is a graduate of Presbyterian College of South Carolina and earned his master of science degree at the University of Pittsburgh.

Emmet R. Blake

BRYAN PATTERSON NAMED PROFESSOR AT HARVARD

Bryan Patterson, a member of the Museum's paleontology staff since 1926 and a divisional curator since 1942, has resigned, effective June 30, to accept an appointment at Harvard University as Alexander Agassiz Professor of Vertebrate Paleontology. Appointment to this post is recognized as one of the outstanding honors in the field of zoological research.

Bryan Patterson

Curator Patterson has been engaged for years in studies of the ancestry of mammals, particularly the evolution of mammals in South America. His notable achievements in this field had been previously recognized by the award of a Carnegie Corporation grant in 1938 for travel and study in Europe and two Guggenheim Foundation fellowships (1951–52 and 1954–55). The latter awards enabled him to extend his researches during long periods in Argentina.

A native of London, Patterson came to the United States in 1926, at which time he began his Museum career as a preparator in vertebrate paleontology. He later served as Assistant in Paleontology and Assistant Curator of Fossil Mammals. From 1942 to 1947 he was Curator of Paleontology; in 1947 he became Curator of Fossil Mammals. During World War II he saw service from Normandy to Germany with the U. S. First Infantry.

MUSEUM SPONSORS 'DIGS' IN CHICAGO AREA

By ELAINE A. BLUHM
ASSISTANT IN ARCHAEOLOGY

For some time archaeologists at Chicago Natural History Museum have been aware that very little is known about the archaeology of the area closest to the Museum—the Chicago region. Many people have collections of Indian artifacts such as axes and arrowheads, but few of the collections have been studied in detail. When records concerning the places where artifacts were found are lacking, a collection loses much of its meaning.

Some time ago members of the Earth Science Club of Northern Illinois became interested in this problem, and under the guidance of David Wenner, Jr., a qualified archaeologist, they began to locate and record sites in the area. This summer the Museum is planning to continue this work, and members of the staff hope to locate and to test sites of Indian villages and camps in the Chicago region.*

It is important that this work be undertaken soon. If it is not, much of the information about the Indians who occupied the region before white men came will be lost. Indian camp sites, burial grounds, and villages are being destroyed daily by new roads, new houses, new schools, new industries, and other projects of modern urban progress. In some cases people have collections from destroyed sites that will give clues as to who occupied the sites and when the sites were occupied. Members of the Museum and their friends can assist the staff in writing the prehistory of Chicago if they will report collections that they may have from known locations in the city and suburbs.

From the limited amount of work already done by members of the Museum staff, the Earth Science Club, and University of Chicago students we know that Indians lived in the Chicago region ever since 5000 B.C. But more work must be done to fill in many gaps in the story of where and how the Indians lived for almost 6,500 years before Columbus discovered America.

* Lake, DuPage, and Cook counties are included in this study, which will be conducted for the Museum by Miss Bluhm.

SOME BIRDS ARE 'SKUNKS'!

By AUSTIN L. RAND
CHIEF CURATOR OF ZOOLOGY

WHEN Mrs. McGillihoulie or her daughter discourages a visitor to their cottage by dashing a pan of dishwater over him, they're using a technique that is followed in essence by the fulmar. The fulmar spits out an oily fluid at an intruder that approaches its nest.

The fulmar, one of the lesser relatives of the albatrosses, is a gray and white sea-bird of northern oceans. Most of its life is spent at sea where enemies are few. Even when it comes to land to nest, its size (that of a gull) and its disposition seem adequate protection for the full-grown bird. But the downy young fulmar must spend some weeks on the ledge as it grows up. During the first week or two of its life, one or the other of its parents is constantly with it. After that, both may be away for long periods seeking food. But the young bird, which would be a meal for one of the larger marauding gulls, has its parents' habit of spitting oil at intruders. Its aim isn't very good, and its range is small—only a few feet—but oil spitting seems to be an actual defense.

A Fulmar

Oil spitting is done by a number of other species of tube-nosed swimmers—that group of sea-birds ranging in size from the tiny petrels through the larger shearwaters and fulmars to the giant albatrosses. Interestingly, the young birds seem better at oil spitting than the adults and in some species only the young do it.

The origin and the function of stomach oil has long been a mystery. Recently Dr. L. H. Matthews has shown that this oil is a secretion from the proventriculus, the forepart of the stomach that in most birds is important for secreting digestive juices. When modern studies were made of the fulmar on its nesting ledges on the cliffs of the British Isles, the use of stomach oil as a weapon—a projectile to drive intruders, such as gulls, from the nest—came as a new explanation of the function of stomach oil and apparently an important one.

MANY EXPLANATIONS

It would seem that human ingenuity has about exhausted itself in suggesting functions of stomach oil. It has been said that the oil may be used in excretion as a means of ridding the system of excess vitamins and fats; in feeding the young (this is surely only an incidental use because the young manufacture the oil themselves); and in courtship (where the oil is passed from bill to bill the way cedar waxwings pass berries). It has also been said that the oil may be used in preening (waterproofing plumage is certainly a necessity for sea-going birds, but they do have preen glands for this) and in calming rough water (oil has been used for centuries to calm the sea around a ship lying-to). And now we have the new theory that fulmars use stomach oil to defend themselves.

Perhaps with additional knowledge other explanations for the use of stomach oil will present themselves. The primary function may be among the above, with the others incidental and secondary. Or perhaps all the above uses are only incidental, and another function, as surprising as the use of oil for defense, may be found.

Related behavior in other kinds of birds is not far to seek. The gorged turkey vulture quietly digesting its meal may, when alarmed, throw up all its stomach contents to lighten its body so that it can fly away. With the gannets, too, this habit is practised, making escape by flight easier. We must remember that the fulmar spits out not only stomach oil but food; in fact, it regurgitates whatever is in its stomach. This general habit of regurgitation could be considered as having become fixed, especially in the young fulmar, and specialized for a particular purpose.

Among vertebrates the forceful ejection of a fluid as a weapon has evolved at least once in nearly every group. The skunk with its strong-smelling spray from anal glands is well known among mammals. The cobra spits venom, and the horned toad squirts blood from around its eyes. Amphibians have poisonous skin-secretions, but these creatures don't, as far as I know, forcibly eject their poisons. The archer fish takes water into its mouth and squirts it out again as a projectile that will knock insects off perches into the water where the fish can eat the insects. Oil spitting has evolved only once in birds—in the tube-nosed swimmers, of which the fulmar is illustrated here.

Director to Tour Europe

On July 14, Colonel Clifford C. Gregg, Director of the Museum, will sail from New York for several weeks in Europe. His first stop of importance will be in London, where he plans to visit the British Museum, Kew Gardens, and other museums and special exhibits. Subsequently he will tour northern Europe, devoting the last part of his tour to Paris. He plans to return to the Museum immediately after Labor Day.

Appointment in Paleontology

David Techter has been appointed Assistant in the Division of Fossil Vertebrates. He is a graduate of Yale University and did post-graduate work in paleontology at Columbia University. For some time he was engaged in special work at the American Museum of Natural History, New York.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

MAMMALS, A GUIDE TO FAMILIAR AMERICAN SPECIES. By Herbert S. Zim and Donald F. Hoffmeister. Simon and Schuster, New York. 160 pages, 218 color illustrations (by James Gordon Irving). Paperbound $1, clothbound $1.95.

Seventh in the popular series of Golden Nature Guides, this pocket-size book is a nontechnical introduction to the study of furred animals. The color figures of practically all the larger mammals and most of the smaller ones found in the United States, Canada, and offshore waters are skillfully depicted in typical attitudes against natural backgrounds. The brief and simple text accompanying the picture of each animal consists of carefully selected data on distinguishing characters and habits. Included with the text is a map showing the range of the described species.

The section on whales, which is typical of the treatment given each order of mammals, packs an amazing amount of information in concentrated and instantly understandable form. The 80- to 100-foot-long blue whale is drawn to scale with a man, horse, and elephant standing alongside. It appears that the three could just as easily stand inside the whale's mouth. The information on past and present economic status of whales and the color map of whaling waters are extra measures of value.

In contrast to these largest of all animals, the tiny size of the newborn young of the common opossum is emphasized by showing ten of them scattered in the hollow of a teaspoon. An outstanding feature of the *Guide* not found in other handbooks of the class is the illustration of relationships among mammals by means of family trees with figures of living and extinct species. Scientific names of the animals, given in the index only, could just as well have been included with the common names in the text. Students, teachers, and naturalists in need of a handy guide to American mammals will find this book stimulating.

PHILIP HERSHKOVITZ
Associate Curator of Mammals

Technical Publication

The following technical publication has been issued by Chicago Natural History Museum Press:

Fieldiana: Zoology, Vol. 35, No. 3. *Check List of North American Water-Mites.* By Rodger D. Mitchell. 44 pages. 76c.

MOVIES FOR CHILDREN ON SIX THURSDAYS

The summer series of six free motion-picture programs for children will be given in the James Simpson Theatre of the Museum on Thursday mornings from July 7 to August 12 inclusive. There will be two showings of the films on each program, at 10 A.M. and 11 A.M. (*because of an extra-long film on July 7, the second show on that date will begin at about 11:20 a.m.*). A special feature on the July 14 program will be a preview of "Vesta, the Transparent Dog," special exhibit described elsewhere in this BULLETIN. The programs are presented by the James Nelson and Anna Louise Raymond Foundation. Date and titles of the films follow:

July 7—BAMBI
Disney's story of the deer
(repeated by request)

July 14—NATURE'S CHILDREN
Plus preview of Vesta, the
Transparent Dog

July 21—SEAL ISLAND
A Disney "True-Life Adventure"
color movie
Also a cartoon

July 28—FAIRY STORIES
Also a cartoon

August 4—TRAILSIDE ADVENTURES
The Museum's own film on what you might see along trails in our woodlands and meadows. Story by Harriet Smith, Chicago Natural History Museum

August 11—NANOOK OF THE NORTH
An Eskimo Story

Children may come alone, accompanied by parents or other adults, or in organized groups.

GIFTS TO THE MUSEUM

Following is a list of principal gifts received during the past month:

Department of Anthropology:

From: Victor R. Kohnstamm, Mexico City—pottery vase in Aztec style, containing charred human bones

Department of Botany:

From: Holly R. Bennett, Chicago—238 phanerogams; University of Notre Dame, Notre Dame, Indiana—5,329 herbarium specimens; Dr. W. Rauh, Heidelberg, Germany—27 plants, Peru

Department of Zoology:

Barton S. Austin, Woodstock, Ill.—bird-skin; Dorothy Beetle, Laramie, Wyo.—collection of inland shells, South America; Dr. Thomas Daggy, Davidson, N.C.—flat bug (*Nannium pusio* Heid.); D. Dwight Davis, Richton Park, Ill.—11 rodents, California; Dr. and Mrs Henry Field, Coconut Grove, Fla.—collection of sea shells, Dhahran, Persian Gulf; Dr. John H. Hendrickson, Singapore—snake; Harry Hoogstraal, Cairo, Egypt—17 hedgehogs; Dr. Robert F. Inger, Homewood, Ill.—2 frogs; Dr. Herbert W. Levi, Madison, Wis.—8 salamanders, Colorado; Lincoln Park Zoo, Chicago—2 frogs, 2 snakes, lizard; Dr. Charles Lowe, Tucson, Ariz.—6 salamanders, 7 lizards, 4 snakes, frog, New Mexico and Arizona; D. C. Lowrie, San Francisco—4 frogs, 12 snakes, lizard, Japan; Ian Moore, El Cajon, Calif.—8 paratypes of staphylinid beetles, California and New Mexico; A. Stanley Rand, Chesterton, Ind.—18 lizards; J. M. Weller, Chicago—collection of fresh-water shells, Philippine Islands

Library:

Contributions of books from: Dr. Karl P. Schmidt, Homewood, Ill.; Luis Angel Arango, Bogotá, Colombia; Mr. and Mrs. Paul A. Benke, Chicago; Estate of Ethelwyn Sweet Quimby

Gem Prizes Awarded

Fifteen trophy cups were awarded by the Chicago Lapidary Club to the top prize-winners in the various divisions of the Amateur Gem and Jewelry Competitive Exhibition held at the Museum during June. In the accompanying photograph most of the cups are displayed by Barbara Twombley (left) and Wanda Barker, Patricia Stevens models who posed with selected exhibits at the Museum for newspaper photographers. J. Lester Cunningham won two of the three grand prizes, the Dalzell Trophy for best of show and the Directors' Trophy. The third grand prize, called the Presidents' Trophy, went to Alvin E. Ericson. In addition to cups, scores of blue, red, and gold ribbons were awarded. The "rockhounds" of the lapidary club plan to continue these shows annually in co-operation with the Museum, and many members will be working throughout the year in preparation for the 1956 event.

TWO LECTURE TOURS DAILY OFFERED IN SUMMER

During July and August, lecture tours of Museum exhibits will be offered in both the mornings and the afternoons of weekdays, Mondays through Fridays inclusive; on Saturdays and Sundays, tours will be omitted.

Except on Thursdays, the morning tours will be devoted to the exhibits in one specific department. The afternoon tours (and Thursday morning) will be comprehensive in scope, touching on outstanding exhibits in all departments. Following is the schedule that will be followed weekly:

Mondays: 11 A.M.—Animals Around the World
2 P.M.—Highlights of the Exhibits

Tuesdays: 11 A.M. People and Places
2 P.M.—Highlights of the Exhibits

Wednesdays: 11 A.M.—World of Plants
2 P.M.—Highlights of the Exhibits

Thursdays: 11 A.M. and 2 P.M.—Highlights of the Exhibits

Fridays: 11 A.M.—Records from Rocks
2 P.M.—Highlights of the Exhibits

NEW MEMBERS

(May 16 to June 15)

Contributor

Mrs. Mary Elizabeth Clyborne

Associate Members

William A. Armstrong, Dr. Robert Beebe, Dr. Vincent A. Freda, Henry K. Gardner, Henry N. Hart, George Hartung, Jr., Joseph H. Makler, William A Perry, Charles R. Swibel, D. H. Wilson

Annual Members

Charles Howard Alberding, Dr. Alvin F. Bates, Mason L. Bohrer, Michael J. Brady, William R. Buge, George R. Chadwick, Mrs. F. Patrick Conlon, Dr. Jack P. Cowen, Earl D. Crane, Dr. I. Milton Dawson, A. F. Escudier, Dr. Charles I. Fisher, Miss Anne Fleischman, Miss Harriett E. Fox, Mrs. Roston Gore, Mrs. Ivan Hill, Henry A. Hart, H. E. Jennings, H. J. Jostock, Mrs. Estelle Joy, John J. Kapov, Dr. Frank B. Kelly, Allan B. Kline, R. H. Lamberton, William B. Latta, Leon Lonnes, Bert Lozins, John F. Mannion, Mrs. Lawrence E. Norem, Stewart Patterson, Walter C. Rundin, Jr., Robert James Sadlek, Nelson D. Stoker, Binford H. Sykes, George C. Tracy, Dr. Paul C. Tracy, Wheeler Tracy, Mrs. G. R. Walker, Kenneth L. Weeks, George R. White, Bennett Williams, Mrs. Jack A. Williamson, Harold F. Wood, Dr. A. W. Woods

"Man-killing fishes"—the "500-volt" electric eel, the piranha or cannibal fish of the Guianas and Brazil, and sharks—are among the exhibits in Hall O.

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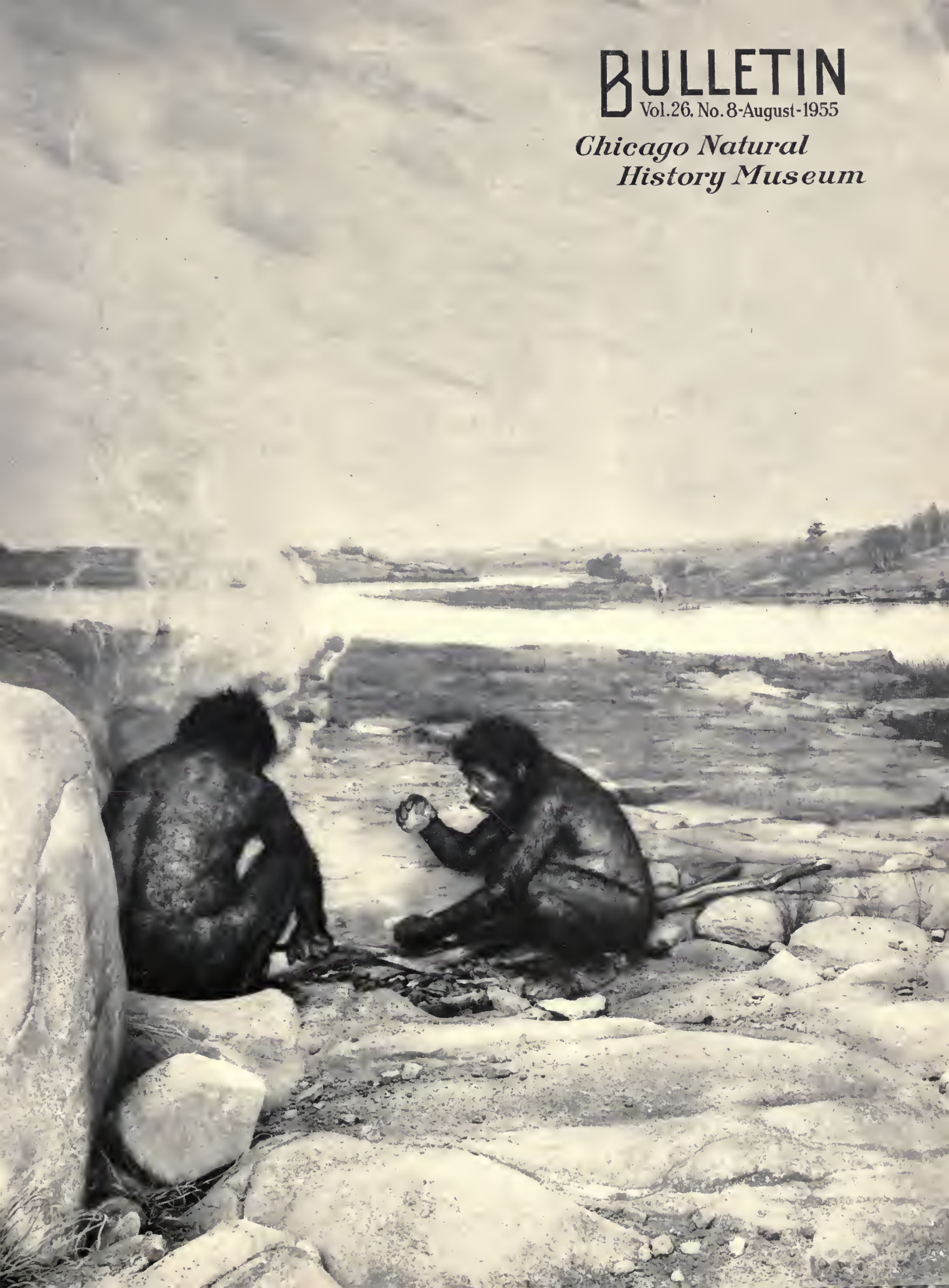

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REPRODUCTION IN BIRDS

By AUSTIN L. RAND
CHIEF CURATOR OF ZOOLOGY

Living things differ from inanimate ones in being irritable, in growing, and in reproducing themselves, and the combination of these three attributes is unique. It is the third of these attributes of life, reproduction, as it takes place in birds, with which an exhibit in Boardman Conover Hall (Hall 21) is concerned.

There was a time when it was believed by everyone that "spontaneous generation" took place, that dirt bred flies, mud bred worms, cheese bred mice, and the like. Now we know this to be a fallacy, and that all life comes from pre-existing life. The torch of life is handed on from parent to offspring, from generation to generation. Its origin need not concern us here. What we are concerned with is reproduction in birds as an illustration of the basic mechanism of this transmittal.

All birds reproduce by laying eggs. It is the female, of course, that lays the eggs, but each parent (male and female) contributes a germ cell to the egg. A female bird may lay eggs, even when there has been no male bird present and no mating has taken place. This is the usual thing in poultry farms where no roosters are kept. Cage birds, parrots or canaries that have been kept alone for years, may sometimes suddenly lay eggs, much to the astonishment of their owners. But such eggs lack the male germ cell and are infertile. They will not produce chicks.

COLOR DIFFERENCES OF SEXES

The bobwhite quail was selected to illustrate "the bird" in the exhibit. The male quail is more brightly marked than the female, as is frequently the case when the sexes are different in color, though in some species of birds the female is brighter.

Carved models illustrate the *gonads*, as the essential reproductive organs are called, and their ducts. The section dealing with the male shows the position of the reproductive organs in the body. The paired gonads or testes lie on the upper wall of the body cavity on each side of the mid-line, adjacent to the kidneys. These produce the male germ cells or spermatozoa, collectively referred to as the sperm. From the testes lead the two sperm ducts, which carry the sperm into the enlarged terminal portion of the intestines, the cloaca. From here the spermatozoa are discharged through the anus during copulation.

The exhibit includes an enlarged model of a number of spermatozoa. Each spermatozoon is composed of a head and a long tail or flagellum by means of which it swims. Spermatozoa are transferred from the male to the female at copulation, when the cloacas of the two birds are brought into contact (in some birds an organ of intromission is present). The spermatozoa swim up the oviduct of the female to meet the descending egg, and one of them fertilizes the egg.

On the opposite side of the same panel in the exhibit are the female reproductive organs. In most female birds there is but a single female gonad, or ovary. It lies on the left side of the mid-line of the body, against the kidney. Here the female germ cells or eggs ripen one by one and receive a layer of egg yolk, which is food for the embryo. The ripened egg is shed from its ruptured capsule, finds its way into the entrance of the oviduct, and starts down. In the upper part of the oviduct the egg is fertilized by a spermatozoon. Then, as it passes down this tube, the white or albumen of the egg is laid down, then the membranes, and finally in the lower part of the oviduct the shell and its color are added. The egg is then ready for laying. It is expelled from the oviduct into the cloaca, which is the common chamber where oviduct and intestines meet, and through the anus.

EGG NUMBERS VARY

The number of eggs laid by wild birds varies. There may be only one, as with some sea birds and many tropical pigeons; or there may be two eggs, as with our ruby-throated hummingbird, or a clutch of a dozen or so eggs, as with many gallinaceous birds and ducks. Sometimes if one egg is removed from the clutch during the laying period, an additional egg may be laid to replace it. There is a record of a flicker that was thus induced to lay more than 70 eggs in a season. The domestic hen, in the course of its long period of domestication, has come to lay an egg daily over long periods.

Most of the growth of the embryo in the egg takes place after the egg is laid. The heat necessary for this growth is ordinarily supplied by the parent's body. The female usually broods the eggs. In some species the male and the female alternate, and in some rare cases the male alone may nestle down on the eggs and brood. There are a few that do not brood at all—for example, the mound builders or megapodes of the Australian area do not incubate their eggs by brooding but bury them in the ground where the soil provides the necessary heat for the embryos to develop.

Within the egg the embryo depends on the stored food, the yolk and the white of the egg. The time of development (the incubation period) varies. The young of our quail hatch in about twenty-three days. In some species, such as many of the warblers, the incubation period may be slightly less than two weeks; in others, for example certain albatrosses, it may be nearly nine weeks.

For some little time before the egg hatches, the quail chick may be heard chirping in the egg. At hatching time the bill, armed with a small transitory projection on its tip—the egg tooth—works against the shell and breaks through. The chick twists and breaks the shell until it falls apart, and the newly hatched chick lies wet and nearly helpless in the nest. Within a few hours the chick is dry and able to follow the mother quail.

Not all young birds hatch in such an advanced stage. Some are nearly helpless for a long period after hatching and need to be cared for in the nest. This aspect of the question deals with the growth of young birds and is taken up in a near-by companion screen.

THIS MONTH'S COVER

The campfire scene on our cover shows Chellean Man of 250,000 years ago as he is reconstructed in one of the eight dioramas by the late Frederick Blaschke in the Museum's Hall of the Stone Age of the Old World (Hall C). The Chelleans were the earliest human beings of whom there is evidence in Europe. On page 3 Curator George Langford claims for them the world's first invention and relates how he, in the name of The Man of Chelles, formally applied to the U. S. Patent Office for recognition of this claim.

PATENT APPLIED FOR—ON 250,000-YEAR-OLD INVENTION

By GEORGE LANGFORD
CURATOR OF FOSSIL PLANTS

IN THE EARLY PART of 1937 I filed an application in the United States Patent Office, Washington, D.C., on the world's first invention of which there was positive and abundant evidence.

It was the first recorded application of its kind. In making it, my customary role was reversed because in this case I was acting as patent attorney and my client was The Man of Chelles, a symbolic individual representing a group of men (Abbevillian) living on the banks of the Marne River, now the town of Chelles, in France near Paris.

The invention claimed for my client was a flaked flint tool about the size and shape of a man's hand. Since I was familiar with U. S. Patent Office procedure, my application was filed in the ordinary formal manner, and it received the usual routine attention from the U. S. Patent Examiner. There was no prior art, and the granting of the patent devolved upon the date of application. According to the rules, an inventor was required to file his application promptly after his invention was put into practical use. As my client's invention dated back about 250,000 years and the application was filed in A.D. 1937, the vast discrepancy in time precluded the granting of a patent.

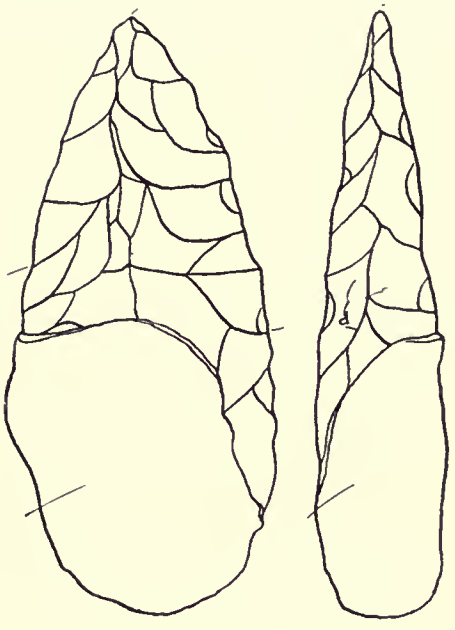
OFFICIAL RECOGNITION

I was well aware of this obstacle in the first place. I filed the application not in a spirit of levity but for the serious purpose of determining from those skilled in diagnosing inventive merit my client's claim to one of the world's most important inventions. In response, my application as drawn was published in the *Journal of the Patent Office Society* (May, 1937, pp. 346–350) along with other U. S. patents issued at that time. Eventually the U. S. Patent Office Examiner recognized the merit of the invention although no patent could be granted because of the long delay in filing the claim.

The many inventions of modern times had small beginnings. This is true of all of them. There are many groups of hundreds or thousands of inventions, each group stemming from a single conception, seemingly ridiculously small when compared with its vast progeny.

The Man of Chelles shaped a flint with two cutting edges converging to a piercing point, which enabled it to penetrate flesh and bone. We call it a "hand stone" because it is believed to have been held and used in the bare hand. Later it was attached to a wooden shaft. Spear, arrow, ax, dagger, and sword all emanated from my client's invention of two cutting edges converging to a piercing point. Trivial as this may seem, it was an important step toward our modern civilization.

The hand stone was conceived thousands of years before man used metals in place of stone. In his quest for food, Abbevillian (or Chellean) man competed with mammoth elephants, rhinoceroses, lions, and other animals of species now extinct. He was learning how to use his hands for the making of tools and weapons to meet this competition. He may have conceived inventions other than the hand stone but we have no knowledge of them. The only evidence is the flints he shaped and used. Many of them have been found near Chelles and elsewhere, together with hammerstones and



WORLD'S FIRST INVENTION

Sharpened hand stone of Chellean Man of 250,000 years ago. It was the device that led to the later development of spear, arrow, ax, dagger, and sword —all, like it, based upon the principle of two cutting edges converging to a sharp point.

flint flakes, showing where and how The Man of Chelles made his tools. They were made rather roughly by striking off flakes from a flint lump with a large pebble used as a hammer.

SUCCESSIVE CULTURES

There followed a period of Acheulean culture when the flint edges were made straighter and sharper by finer flaking. Mousterian culture succeeded the Acheulean. Up to this point there are no records of the men themselves in the form of skeletal parts, but Mousterian tools have been found in association with the skeletons of Neanderthal man. A step closer to modern man occurred with the appearance in the next period of people whose culture is known as Aurignacian. These newcomers were Cro-Magnons. They made and used artifacts of bone as well as stone. They were the first artists who made sculptures, drawings, and paintings of animals on the walls and ceilings of their cave dwellings beneath overhanging cliffs. Their bonework and artistry were carried through the Solutrean into the next or Magdalenian stage of civilization, and the Paleolithic or Old Stone Age neared its close at the end of the Azilian era, about 10,000 years ago.

The names of all of these periods are derived from French towns near which man's works were first discovered. Not until the Neolithic or New Stone Age did man learn the use of metals after chipped flints had served as his basic tools for more than 200,000 years. Chellean Man's hand stone was a long time in attaining its final perfection.

However, the claim is open to challenge—the patent perhaps rightfully belongs to some African of hundreds of thousands of years ago, as recent evidence seems to indicate that the earliest man and the earliest tools were in Africa rather than Europe or elsewhere.

All of the prehistoric peoples mentioned herein—Chellean, Mousterian (Neanderthal), Aurignacian, Solutrean, Magdalenian, Azilian, and Neolithic—are represented in life-size restorations in a series of dioramas exhibited in the Museum's Hall of the Stone Age of the Old World (Hall C).

TWO MORE FREE MOVIES FOR CHILDREN

The final free programs in the Raymond Foundation's summer series of movies for children will be given in the James Simpson Theatre of the Museum on the mornings of the first two Thursdays in August. There will be two showings of the films on each program, at 10 A.M. and 11 A.M. Dates and titles of the films follow:

August 4—TRAILSIDE ADVENTURES

The Museum's own film on what you might see along trails in our woodlands and meadows. Story by Harriet Smith, Chicago Natural History Museum

August 11—NANOOK OF THE NORTH

An Eskimo Story

Dendrological Expedition

An expedition to collect western species of dendrological material, both conifers and broad-leaved trees, will get under way with the departure early in August of Emil Sella, Curator of Exhibits in the Department of Botany. Oregon will be the principal field of collecting activities, but Curator Sella may work also in neighboring states.

DEFLATING THE DINOSAURS: THEY WERE NOT ALL GIANTS

By JANE ROCKWELL

ALTHOUGH man has lived on earth approximately one million years, dinosaurs maintained their reign for an estimated 125 million years. Our complex modern age is considered a time of increasing specialization, but the prehistoric dinosaurs were masters of specialization—in their own, often complicated way.

VERY EARLY AMERICAN

One of the duck-billed dinosaurs, Hadrosaurus, was bipedal, but could walk on all fours if necessary. Skeleton of this creature was the first dinosaur to be found and described in North America.

Ranking with Egyptian mummies and restorations of prehistoric men as the most asked-about exhibits in Chicago Natural History Museum, dinosaur skeletons may be seen in Ernest R. Graham Hall of Historical Geology (Hall 38). Other skeletons and miscellaneous bones are available for study by scientists and students in the reference collections of the Department of Geology. Additions are made as frequently as suitable new specimens can be obtained. Only recently, a skeleton of *Protoceratops*, one of the most interesting types, was added to Hall 38. A remarkable specimen of the giant carnivorous *Gorgosaurus*, a gift to the Museum by members of the Board of Trustees, is now in preparation in the Museum laboratories and is expected to go on exhibition sometime next year.

Dinosaurs are of special interest to the public because so many of them are spectacular in size and grotesque in form. But many persons fail to realize that there are several types which did not attain impressive size; some true dinosaurs were no larger than our present-day rooster. Dinosaurs are worthy of study for many reasons other than their giant size, terrifying aspect, and undersized brain.

Dinosaurs lived during the Mesozoic era, which began some 200 million years ago and ended about 75 million years ago. During this time they were represented by a fantastic array of plant-eating and carnivorous creatures that inhabited uplands, swamps, rivers, and lakes, or even climbed trees. Dinosaurs were among the most successful of the backboned animals living on earth if their duration in relation to the earth's history is considered. Evolutionary processes were responsible for a constant change and specialization in the creatures so as to adapt them to their changing environments.

"TERRIBLE LIZARD"

Related to crocodiles, snakes, and lizards, dinosaurs were cold-blooded reptiles whose name was derived when an English paleontologist and anatomist, Sir Richard Owen, invented the name Dinosauria from the Greek *deinos* ("terrible") and *sauros* ("lizard") more than one hundred years ago. Since that time dinosaurs have been classified in two separate orders: Saurischia (reptile hips), in which the pelvic bones were arranged in typical reptile form, and Ornithischia (bird hips), in which the bones of the pelvis were constructed along more bird-like lines. Consequently the word dinosaur does not refer to any single or natural group of reptiles. Although it is a loose term, the word is useful in describing members of both orders.

During their life on earth, the general trend of both saurischian and ornithischian orders was toward an increasingly large size and a modification of their original two-legged posture. As some of them grew larger, they became too bulky to be supported on two legs. Only the carnivorous theropods of the saurischian order retained the purely bipedal pose, while the others reverted to wholly or partially quadrupedal poses. The front legs even of those that were purely quadrupedal nearly always were smaller than the hind legs—an inheritance from their bipedal ancestors, the thecodonts of the early Triassic period (some 200 million years ago.)

DISTINGUISHED SPECIES

Skeleton of Protoceratops, recently installed in Hall 38 of Museum. This ceratopsian is the only dinosaur ever found with its eggs.

The culmination of size and development in the theropods came with *Tyrannosaurus*—named the king of dinosaurs—largest and most terrifying of the land-living carnivores. Fifty feet long, the giant's head was about 18 or 20 feet above the ground. It is estimated that the beast weighed between eight and ten tons. Akin to *Tyrannosaurus* was *Gorgosaurus*, a creature somewhat smaller in form and showing lesser degrees of specialization. The skeleton of *Gorgosaurus* now being assembled at the Museum is about forty feet long.

Another example of the great degree of specialization found in dinosaurs is *Struthiomimus*, the ostrich dinosaur, also a theropod. A dinosaur of medium size, this animal's ancestors turned from a flesh-eating to a plant-eating diet. While most theropods had medium or short necks, *Struthiomimus* had a long bird-like neck and no teeth in its beak-like jaws.

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FORMIDABLE WEAPON CARRIER

Stegosaurus had a series of upright, triangular plates on its back, slanted alternately to right or left, believed to have served as defensive armor. Tip of the animal's tail bore four huge spikes. One of the series of twenty-eight murals in Ernest R. Graham Hall (Hall 38). By the late Charles R. Knight.

LAND-LIVING GIANTS

Members, also, of Saurischia were the sauropods—the giants of the dinosaurian world and the giants of all time, so far as our knowledge of the land life of the past goes. Only the huge whales of the sea have exceeded them in size. Beginning with *Plateosaurus*, which was 20 feet long and notable for its long tail, neck and comparatively small head, and including the Jurassic period's *Apatosaurus* (formerly called *Brontosaurus*), *Camarasaurus*, and *Brachiosaurus*, the sauropods had a long and eventful history. Typical was the plant-eating *Apatosaurus*, which carried its great weight, distributed over some 50 or 60 feet, on all fours. Another North American form, *Diplodocus*, was similar to *Apatosaurus* except that its nostrils were placed on top of

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WIDE VARIATIONS AMONG DINOSAURS SHOWN IN MUSEUM MURAL

Painting in Ernest R. Graham (Hall 38) shows five kinds of dinosaurs: crested dinosaur (far left), hooded dinosaurs (left, distance), armored dinosaur (short-legged animal in foreground), bird-like dinosaurs (middle distance), and three erect hadrosaurs (right, foreground). A mural by the late Charles R. Knight.

its head, an adaptation to life in the water. This characteristic was further emphasized in *Brachiosaurus*, the largest of the sauropods, whose nostrils were raised in a sort of dome atop its head, so that the animal could thrust its head periscope-fashion above the water to breathe and survey its surroundings. *Brachiosaurus* was unlike its sauropod relatives in that its forelegs were longer than its hind legs.

Reptiles included in Ornithischia were, in general, more highly evolved than members of Saurischia. While saurischians resembled their ancestors in the arrangement of their pelvic bones, ornithischians evolved so that there was a rotation of the pubic bone so that it occupied a position parallel to the ischium, and caused a growth of a new bony process at the base of the pubis which gave added support to the belly. Specialization was more advanced in this order, too, especially in the head and teeth. While Saurischia passed through the major phases of their evolution in Jurassic times (about 160 million years ago), Ornithischia experienced their chief evolutionary development in Cretaceous times (approximately 130 million years ago).

THE DUCK-BILLED GROUP

Least "advanced" of this order were the ornithopods, a large group which included the duck-billed dinosaurs and their relatives. The little specialized *Camptosaurus* and *Iguanodon* were members of this group. Both these creatures were bipedal, but they could walk on all fours if necessary. The front part of their beak-like jaws had no teeth, although flat blade-like teeth were to be found in the back part of their jaws. *Iguanodon* is of particular interest because it was the first dinosaur to be scientifically described. In 1882, Mrs. Gideon Mantell, the wife of a famous paleontologist, found some peculiar teeth in the Lower Cretaceous beds of Sussex, England. Dinosaurs were unheard of at that time and the teeth were thought to be those of a rhinoceros. Later, more bones were found in the quarry where the original discovery was made and these were described as belonging to a hippopotamus. Finally, after more study, it was concluded that the bones were those of a

(*Continued on page 7, column 1*)

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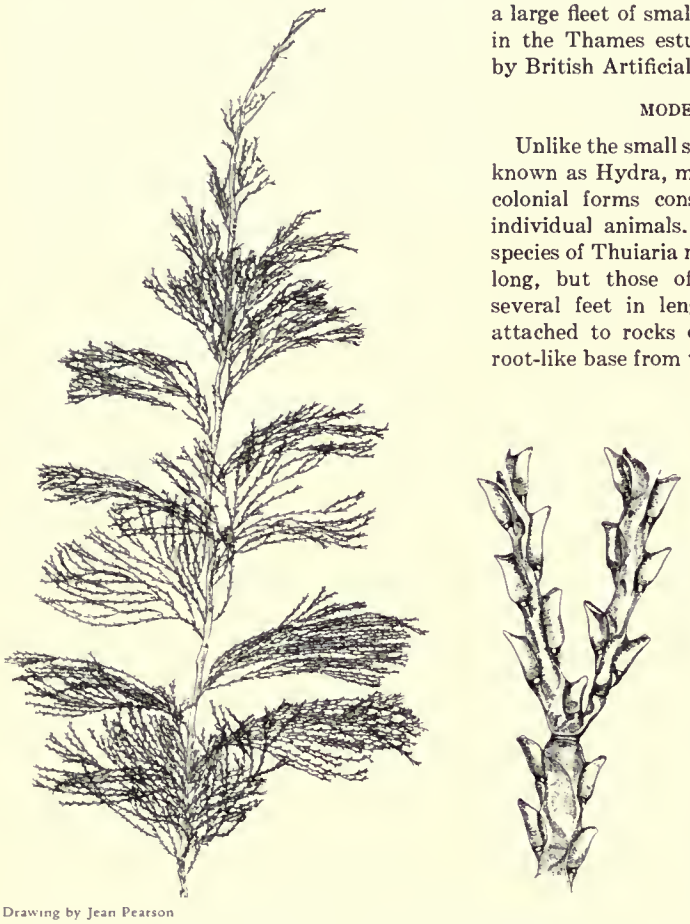
PLANT-EATING GIANT

One of the largest land animals ever known is Apatosaurus (formerly called Brontosaurus). A four-footed plant-eater, its hind limbs were larger and heavier than its front limbs. Apatosaurus lived about 145 million years ago and attained a length of approximately 50 feet. Painting by Charles R. Knight.

WHY SOME 'AIR FERNS' NEED NO SUN OR WATER

By THEODOR JUST
CHIEF CURATOR, DEPARTMENT OF BOTANY

ACCORDING TO CLAIMS made by many American stores, *Japanese air plant* or *air fern* sold by them in three popular varieties (green, red, and brown) needs neither water nor sunlight to grow. Actually it does very well without both, being the dried, prepared, and dyed exo-skeleton of a dead colonial marine animal belonging to the phylum Coelenterata. This phylum includes some of the most beautiful sedentary or free-swimming marine invertebrates such as hydroids and hydromedusae, jellyfishes, sea anemones, and corals.



Drawing by Jean Pearson

'PLANT' THAT'S AN ANIMAL

Japanese air plant or air fern—a zoophyte. At left is a colony of sea-cypress, Thuiaria cupressina; at right, a greatly enlarged portion showing individual hydranths and their position.

In the older literature, these plant-like animals together with sponges and other forms (ascidians) were treated as zoophytes because of their striking resemblance to certain plants. The species most commonly sold in the East is *Thuiaria cupressina* or sea-cypress which is called sea moss in the British trade and Neptune's fern in Chicago chain stores. Its close relative, *Thuiaria argentea*, is known as squirrel's tail. Both species are abundant in the North Atlantic, especially in the English Channel and the Gulf of Maine and on offshore banks. *Thuiaria argentea* is also known from the eastern Pacific, ranging from Alaska to San Francisco Bay, where its silvery colonies are often washed ashore by storms. Dry beach material of these white colonies is easily collected, dyed, and sold as Christmas decorations. Sea moss is regularly harvested by a large fleet of small vessels operating drags in the Thames estuary. It is sold mainly by British Artificial Flowers, Ltd., London.

MODES OF LIFE

Unlike the small solitary fresh-water polyp known as Hydra, most marine hydroids are colonial forms consisting of thousands of individual animals. Colonies of these two species of Thuiaria may be 12 inches or more long, but those of other species may be several feet in length. Usually they are attached to rocks or other substrate by a root-like base from which spring the delicate branched stems (hydrocauli) bearing hundreds of minute polyps.

Most polyps are hydranths (feeding polyps) that capture microscopic organisms. The reproductive polyps, called gonangia, are less common and usually larger and different in shape. The common stem is made up of the external, transparent, non-cellular perisarc, mostly yellowish or brown in color and chitinous in composition, and of the internal, cellular, hollow coenosarc that connects the various polyps. Digested food passes through the coensarc.

Reproduction is both asexual by budding and sexual by means of free-swimming umbrella-shaped medusae. Fertilized eggs give rise to minute ciliated larvae (planulae) that soon settle down and develop into new polyps. This regular sequence of a sexual and asexual generation is known as alternation of generations or metagenesis.

REAL AIR PLANTS

To botanists the term *air plant* (epiphyte) has a very different meaning, referring to plants found growing on branches of trees where they can obtain more light. They use larger plants as substrate without entering into any nutritional relationship with them. Air plants are particularly common in the tropics and warmer regions. One of the best known examples is the Spanish moss of the southern states, a member of the pineapple family. Certain ferns, orchids, and bromeliads represent the most common air plants.

Japanese air plant or sea moss has been on the market for some time. In 1910 Dr. E. F. Bigelow of Harvard University identified it as a colonial hydroid. I am greatly indebted to Miss Edith M. Vincent, Research Librarian, for calling this fact to my attention and to Dr. Fenner A. Chace, Jr., Curator of Marine Invertebrates, U. S. National Museum, Washington, D.C., and Dr. A. K. Totton, British Museum of Natural History, London, for verifying my identification and providing other pertinent data.

Books

(All books reviewed in the BULLETIN *are available in The Book Shop of the Museum. Mail orders accompanied by remittance including postage are promptly filled.)*

MARINE SHELLS OF THE WESTERN COAST OF FLORIDA. By Louise M. Perry and Jeanne S. Schwengel. Paleontological Research Institution, Ithaca, New York, 1955. 318 pages, 55 plates. Cloth-bound $7, paper-bound $6.

This is the revised and enlarged edition of a book that was published in 1940 and generally praised by reviewers. Publications on the mollusk faunas of large stretches of ocean coastlines are not uncommon. The restriction to a special portion of the coast of one individual state was something new. What such a book lacked in number of species listed was largely made up by a more detailed account of life-conditions and habits within the chosen area. Thus the book when it was first published was a success, and the revised and enlarged edition of 1955 can expect to fare even better with critics as well as with shell collectors. Additional species reported within the past fifteen years have been added, and new observations, especially on the laying of eggs, the nature of the egg-capsules, the hatching of the young snail, and the shape of its shells, have expanded the text and are shown in excellent figures on additional plates. In short, everything that was good and praiseworthy in the first edition is improved in the present one. I am sorry to say that the only defect of the old edition, the explanation, in footnotes, of the Greek and Latin scientific shell names, apparently has been taken over unchanged and is, therefore, as bad as it was. However, this is my only negative criticism of the book, and this flaw by no means impairs the book's usefulness.

FRITZ HAAS
Curator of Lower Invertebrates

DINOSAURS—

(*Continued from page 5*)

new type of reptile with teeth like the present-day iguana; hence the name *Iguanodon*. At first the animal was restored as a four-footed creature, but later discovery of seventeen skeletons in a mine in Belgium proved it to have been bipedal.

The ornithopods reached their height of development in the hadrosaurs. They were partially bipedal and partially quadrupedal in gait. Their skulls and jaws were broadened in front into a flat duck-like bill and their toes were webbed to accommodate them for water-life. Several other forms, possessing similar characteristics, also existed in various parts of North America. Accompanying *Gorgosaurus* in the exhibit now in preparation at the Museum is a duck-billed dinosaur, *Lambeosaurus*, that will be shown as the prey of the giant carnivore.

Two groups of Ornithischia that were strikingly different from their relatives were the Stegosauria and Ankylosauria. *Stegosaurus*, a typical representative of the former, was large and completely quadrupedal but with its front legs considerably smaller than its hind legs. Down the middle of its back was a series of upright triangular plates, arranged alternately, while the tip of its tail bore four huge spikes—effective as a weapon against its adversaries. Larger than an elephant, *Stegosaurus* had a brain the approximate size of a walnut. The skull of *Ankylosaurus* was protected by armor plates and its arched back was completely encased in armor. The animal's heavy stiff tail ended in a huge club-like mass of bone. Squat *Ankylosaurus* seems to have been the armored tank of its day.

HORNED DINOSAURS

Last to appear in the long procession of dinosaurs on earth were the Ceratopsia or horned dinosaurs, thought to have descended from a small bipedal animal, *Psittacosaurus* of Lower Cretaceous times. The earliest known ceratopsian is *Protoceratops*, which was from five to six feet long, entirely quadrupedal, and notable for its relatively large head. The front part of the animal's face formed a hooked, parrot-like beak and the back of the skull extended in a pierced or fenestrated "frill" that overhung its neck and shoulder region. *Protoceratops* had no teeth in the front part of its jaws except two tiny vestigial teeth on each side near the front part of the upper jaws—a carry-over from a more primitive stage of development. Although classified as a horned dinosaur, this creature had only the beginnings of a nasal horn and had not developed the specializations of the larger ceratopsians of the future, notably *Triceratops*.

A great deal is known about *Protoceratops* because a number of skeletons and a large series of skulls have been found that reveal nearly all the creature's stages of growth. From these it has been learned that the frill on the back of its skull was not present when the reptile was born. It grew as *Protoceratops* grew and became fully developed when the creature was mature. Scientists have concluded that the frill protected the neck and served as an attachment for the powerful muscles that controlled the movements of the head. Found along with the bones of *Protoceratops* were nests of eggs—the only dinosaur eggs ever discovered in association with skeletons. Two of the eggs contained the bones of unhatched embryos. These findings indicate that probably all dinosaurs were egg-layers. From these small beginnings, the giant horned dinosaurs, such as *Triceratops*, evolved. They attained a length of from 20 to 30 feet and were adversaries of the gigantic *Tyrannosaurus* of Latest Cretaceous times.

By the end of the Cretaceous age, all of the dinosaurs had disappeared from the earth. Precisely why these reptiles became extinct is not known. Food may have been a factor. During the rise of land levels, when mountains were formed, changes in vegetation occurred. Plants which had served as food for the dinosaurs disappeared or were replaced by other kinds of plants which may have been unsuitable to the creatures' diets. As the herbivorous dinosaurs began to vanish, so must have the carnivores who fed upon them. The earth's surface may have changed too rapidly for the dinosaurs, so that their evolutionary changes and specializations were unable to keep pace. This is only one of many suppositions. The extinction of any group of organisms is a result of a complex interraction of many factors, most of which, unfortunately, are of such a nature as to leave no trace in the record of the rocks.

'BROWNIES' STAGE AN EXHIBITION AT MUSEUM

Providing a charming background for their puppet creations, four enthusiastic members of Brownie Troop 360 of Chicago pose with their handiwork, part of the Brownies' exhibit on display through August 12 in Stanley Field Hall. The Brownies (left to right) are Maralyn Shulman, Robbin Sigband, Irene Silverman, and Susan Moestue. They are junior members of the Girl Scouts who have successfully completed an "Expedition Make-Believe" to foreign lands (via Museum exhibits) provided by the Museum's Raymond Foundation. They and other Brownies successfully completing the project received expedition certificates signed by Colonel Clifford C. Gregg, Director.

Daily "Journeys to China" for Young Travelers

China is the destination of children participating in the Museum Travelers program of the Raymond Foundation during August. The travelers may "board airliners" at the North or South Entrance of the Museum at any hour on any day, from 9 A.M. to 4:30 P.M. "Passports" and "travel instructions" may be picked up at either entrance of the Museum.

Ceramic Expert Dies

The Museum regretfully records the death on July 17 of John Louis Pletinckx, Ceramic Restorer in the Department of Anthropology since 1939. Mr. Pletinckx was born in 1892 in Brussels, Belgium. He was educated in England before coming to America.

TWO LECTURE TOURS DAILY OFFERED IN AUGUST

During August, lecture tours of Museum exhibits will be offered in both the mornings and the afternoons of weekdays, Mondays through Fridays inclusive; on Saturdays and Sundays, tours will be omitted.

Except on Thursdays, the morning tours will be devoted to the exhibits in one specific department. The afternoon tours (and Thursday morning) will be comprehensive in scope, touching on outstanding exhibits in all departments. Following is the schedule that will be followed weekly:

Mondays: 11 A.M.—The World of Animals
2 P.M.—General Tour

Tuesdays: 11 A.M.—Places and People
2 P.M.—General Tour

Wednesdays: 11 A.M.—The World of Plants
2 P.M.—General Tour

Thursdays: 11 A.M. and 2 P.M.—General Tour

Fridays: 11 A.M.—Records from the Rocks
2 P.M.—General Tour

CHIEF GEOLOGIST RETURNS FROM VOLCANO STUDY

Dr. Sharat K. Roy, Chief Curator of Geology, returned in July from Central America where he was engaged in field studies on active volcanoes for the past three months. This was in continuation of the studies he began some five years ago.

In El Salvador, Izalco offered him a rare opportunity to observe how a volcano shatters and rebuilds itself. On February 28, following a glowing avalanche that rolled down the northwest flank of Izalco, the volcano, with a thunderous roar that shook the countryside and could be heard for many miles about, blew its top off and split its side, belching forth incandescent lava, steam, and other gases. As late as two weeks ago, Izalco was erupting every few minutes, but it appeared to be on the mend. Already a cinder cone has sprung up over the old crater. As in all volcanoes, Izalco's wounds will heal, but the scars will remain, Dr. Roy says.

In Nicaragua, the volcanoes Momotombo and Cerro Negro were of special interest to Dr. Roy, for both are active and both are growing.

Staff Illustrator Appointed

E. John Pfiffner, who has been appointed Staff Illustrator of the Museum, is a graduate of Wisconsin State College, Milwaukee, and of the Chouinard Art Institute of Los Angeles. He studied also at the Ringling School of Art in Sarasota, Florida. He has taught art at high schools in Wisconsin, served as a muralist for various organizations, and has illustrated a number of books for various publishers. His duties will consist of the varied types of art work required by the departments, divisions, and administration of the Museum and may range from large mural paintings in oil to minutely detailed illustrations for scientific publications.

STAFF NOTES

Dr. Fritz Haas, Curator of Lower Invertebrates, attended the annual meeting of the West Coast Branch of the American Malacological Union last month at Leland Stanford University, California . . . . **Philip Hershkovitz,** Associate Curator of Mammals, was the Museum's representative at the meetings of the American Society of Mammalogists, where he presented a paper on zoogeographic subdivisions of neotropical regions . . . . **Miss Margaret G. Bradbury,** Artist in the Department of Zoology, has resigned to accept a fellowship at Leland Stanford University, where she will teach art and at the same time engage in advanced ichthyological studies . . . . **Dr. Julian A. Steyermark,** Curator of the Phanerogamic Herbarium, spoke on wild flowers before the Skokie Garden Club . . . . **Miss Marion K. Hoffman,** Museum Bookkeeper since 1952, has been promoted to Assistant Auditor . . . . **Miss Lillian A. Ross,** Associate Editor of Scientific Publications, spoke on spiders before the Barrington Natural History Society. Miss Ross, who is also Associate in Insects, recently returned from Europe where she studied spider collections at the British Museum (Natural History) in London, Muséum National d'Histoire Naturelle in Paris, and Senckenberg Museum in Frankfurt, Germany.

NEW MEMBERS

(June 16 to July 15)

Associate Members

George L. Clements, John L. Dole, Mrs. G. Corson Ellis, Mrs. Katherine C. Finnegan, Clarence E. Freeto, R. B. Whitaker

Non-Resident Associate Member

Miss Velma D. Whipple

Annual Members

Kurt J. Ackermann, Miss Edith P. Baxter, James D. Beckett, D. C. Bell, Samuel W. Block, Albert G. Buhring, Charles J. Burg, Frederick S. Crane, Jr., Theodore L. Dahlberg, George De Marke, Joseph P. Demme, Charles W. Desgrey, J. Russell Duncan, William E. Durham, Frank M. Eckert, David C. Eisendrath, Dr. Casper M. Epsteen, Harvey Epstein, Dr. Benum W. Fox, Walter R. Frank, S. L. Goodfriend, Mrs. Leroy F. Harza, Paul H. Heineke, Ben W. Heineman, Dr. J. Henry Heinen, Jr., Harry Jaffe, Ray Prescott Johnson, Dr. A. T. Kenyon, James E. Lowden, S. J. Landau, Bernard W. Levin, Bernard M. Levine, Edmund W. Lowe, Dr. David Bremner Maher, John A. McGreevy, Charles L. Mugg, Dr. Peter S. Y. Neskow, Adolf Nilsson, Richard Orlikoff, Nathan G. Osborne, P. E. Petty, R. L. Redcliffe, George Rich III, Paul F. Rohloff, Dr. Herbert D. Trace, T. J. Tracy, C. A. Wood, Miss Margaret J. Wright

GIFTS TO THE MUSEUM DURING PAST MONTH

Following is a list of principal gifts received during the past month:

Department of Anthropology:

From: Dr. Andrew G. Bustin, Joliet, Ill.—funeral urn, Mexico, and bronze censor, China; Dr. Mathew Taubenhaus, Chicago—2 pre-Columbian pottery vessels, Panama; Robert Trier, Chicago—34 specimens of stone, bone, and wood, New Zealand

Department of Botany:

From: Federal Ministry of Agriculture, southern Rhodesia—9 seeds (Leguminosae); Joliet Township High School, Joliet, Ill.—319 miscellaneous phanerogams; Dr. Earl E. Sherff, Chicago—2 African plants, Hawaiian plant; U.S. Department of Agriculture, Washington, D.C.—isotype of a subspecies of Ilex, Florida

Department of Geology:

From: Dr. G. Arthur Cooper, Washington, D.C.—fossil-bearing limestone, Glass Mountains, Texas; Clarence Johnsen, Chicago—70 ore specimens, Arizona; Loyola University, Chicago—fossil elasmobranch teeth, New Mexico; Nancy Robertson, Chicago—collection of fossil invertebrates, Michigan, Wisconsin, and Illinois

Dr. Ruth Marshall Dies

Dr. Ruth Marshall, Research Associate in Arachnids, Department of Zoology, died May 12 at the age of 86. Dr. Marshall did much of the basic work on description and classification of North American water mites and was one of the relatively few women ever to acquire an international reputation as a systematic zoologist. She received her Ph.D. degree in zoology at the University of Nebraska in 1907 and served as chairman of the department of biology of Rockford College for twenty years. Retiring in 1935, she continued her studies of the water mites until 1944, when she published her fortieth and last research paper. In 1915 she deposited her scientific library and her collection in Chicago Natural History Museum. Her water-mite collection, which is the most important in the western hemisphere, contains the types of about 85 per cent of the species described from North America. The Board of Trustees, in recognition of her generosity and scientific accomplishments, elected Dr. Marshall a Contributor to the Museum.

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Chicago Natural History Museum

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Members are requested to inform the Museum promptly of changes of address.

For Members' Night (Oct. 7) . . .

WE OFFER NO LESS THAN THIS EARTH

DESPITE the ever-present possibilities of sudden incalculable events raised by the combination of international conflicts and the potentialities of atomic fission, it is quite confidently expected that the earth will still be here on October 7 (a Friday). That date has been selected for this year's MEMBERS' NIGHT at the Museum, the theme of which will be, of all things—the EARTH! That is, the main feature of the evening's program, which will run from 7 to 10:30 P.M., will be a preview opening of the Museum's newest hall—the Hall of the Earth (Hall 34—Physical Geology second floor, northwest side).

Confronted daily with the confusing welter of world politics, local community problems, the demands of individual, family and social life, the high costs of everything, the preservation of health, and the thousand and one other considerations that make living so complicated, probably the average man or woman scarcely ever gives a thought to the most fundamental factor in his existence—the earth itself. Until recent years, only divine intervention or the action of nature taking its course over millions or billions of years were seen as possible causes of total cosmic catastrophe, and no one really worried. Today, as man himself continues to toy with forces that in a second of recklessness conceivably might usher everything mundane out of existence, a good many people are finally scared, or at least aware that there is no guarantee of security even for the planet they inhabit. At this juncture, therefore, the earth and the forces within and without it are something truly and immediately worthy of man's respect and study, and in opening its new hall the Museum is presenting a subject as timely and interesting as anything man could consider.

THE LATEST CONCEPTS

In the new Hall of the Earth, all the exhibits on this vast subject have been devised to present the most up-to-date, authoritative information and widely accepted theories and concepts of modern science on the subject. To enhance the attractiveness and interest of the hall, the most modern museum techniques in exhibit preparation have been applied. The accompanying labels have been carefully written to present essential information in clear and concise form. Museum Members are therefore invited to come and see how the basic facts underlying the composition and structure of the earth itself, and the forces that act upon it from within and without have been organized and visualized for public instruction.

The new hall contains thirty-seven exhibits, of which four are elaborate dioramas illustrating some of the principal and most spectacular earth phenomena. These are:

1. The effects of stream erosion. This is illustrated by a model of part of the Grand Canyon of Arizona, with the Colorado River as erosional agent.

2. The solvent action of ground waters. This is demonstrated by a model showing the interior of a typical cave.

3. The effects of glaciation. What a glacier is and what it does to the topography is shown by a model.

4. Volcanism. The processes by which volcanoes come into existence, volcanic power and activity are illustrated in the fourth of the dioramas.

The dioramas are the work of George Marchand, noted sculptor of West Seneca, New York, who in 1951 prepared the dioramas of prehistoric invertebrate life in Frederick J. V. Skiff Hall (Hall 37). The present models reveal the same creative artistry and masterful craftsmanship applied to exhibits in the field of physical geology.

FILMS OF VOLCANOES

The new hall was prepared under the general supervision of Dr. Sharat K. Roy, Chief Curator of Geology. As another feature of Members' Night, Dr. Roy, who recently returned from an expedition to study volcanoes in several Central American countries, will talk on his studies in the James Simpson Theatre at 9 P.M. Dr. Roy will show color motion pictures that he made on his most recent (1955) as well as previous expeditions.

Members of the staff of the Department of Geology who participated in the preparation of the new hall include Harry E. Changnon, Curator of Exhibits; Preparators Henry Horback and Henry U. Taylor, and Miss Maidi Wiebe, departmental artist.

OPEN HOUSE IN LABS

While the geology theme will be the dominating one for Members' Night, all of the Museum's other scientific departments —Anthropology, Botany, and Zoology—will hold open house for the guests, who are invited to visit third and fourth floor areas of the building usually closed to the public. Here they will find, in their offices, laboratories, shops and studios, the curators, dioramists, taxidermists, artists, preparators and other technicians whose efforts keep the Museum alive. All members of the staff will be available to answer questions on the part of the visitors and to demonstrate various phases of their work.

Museum Members and their guests may wander independently or they may join small conducted tour-groups that will be assembled frequently under the guidance of the six young women of the staff of James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

DIORAMAS OF ANCIENT INDIANS

Rivaling the new geology hall, the Department of Anthropology presents in Hall 7 (Ancient and Modern Indians of the Southwestern United States) on the first floor, three new and spectacular dioramas. One is a restoration of a Mogollon village of about A.D. 300, based upon findings of the series of Archaeological Expeditions to the

(*Continued on page 7, column 3*)

THIS MONTH'S COVER

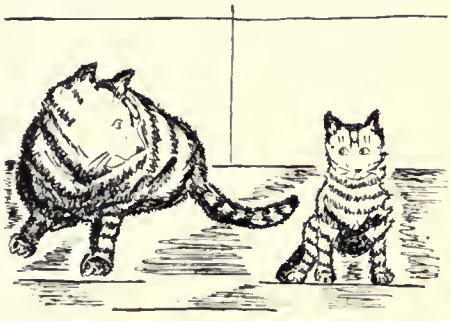
Held sacred to Bastet, the Cat Goddess, our domestic Tabby filled a very important role in the Land of the Nile around 600 B. C. The example of feline majesty on our cover that appears to be emerging mystically from an Egyptian tombstone, is an ancient sculpture in bronze that can be seen in the Museum's Hall of Egypt (Hall J). Some items from the history and mythology of cats, as overheard in a conversation between a mother and her kitten, are related on page 3.

A CAT STILL MOURNS FOR THE GLORY THAT WAS EGYPT

By JANE ROCKWELL

"OF COURSE, to man we've always been a source of fascination and even, at times, of reverence," the broad-banded tabby cat said as she stretched luxuriously and strode to the window, leaving her two-month old replica staring, puzzled, after her.

"I usually wait until my kittens are at least three months old before telling them of their proud history, but your questions about your ancestry seem to indicate, as I suspected, that you are the most precocious of all fifteen before you."



The kitten, whose name was Daniel, cast his eyes down but was unable to conceal the pride that made his whiskers quiver just perceptibly.

"Come over here and sit by the window and I'll tell you of your glorious history and why it is so splendid to be a cat—especially a tabby." With a great effort, chubby little Daniel managed to lift himself onto the window sill. Seeing his mother had already assumed her most pedagogical mien, he settled down quietly, his ears standing upright to avoid missing anything.

'WE WERE THE FIRST . . .'

"Our exact origin is unknown, but don't let that disturb you," said his mother. "There is good reason to believe that we cats were domesticated even before man began to make a record of history. The first recorded reference to us is found in Egypt where felines were venerated as sacred to the cat goddess, Bastet, or Lady of Love. Incidentally, all these sacred cats were tabbies, which means, of course, that we were the first known cats. This bit of information might come in handy, Daniel, when one of those white angoras in the next block begins showing her tiresome conceit.

"Where was I? Oh yes, Egypt. Cat worship, according to some historians, can be traced to a prehistoric Cat Clan dating as far back as 4000 to 10,000 B.C. that inhabited the city of Bubastis, or Pasht, the most important center of cat worship in all Egypt. Bastet, the cat-goddess, may have come from the totem of the clan that represented the sun and moon as the goddess did later. Fashioned most frequently in bronze, Bastet was shown in human form, but with the head of a cat. At times she was represented with short garments, revealing human limbs and a cat's feet and tail. And sometimes she was depicted in long garments, most often carrying a sistrum, which was a musical rattle used in worship, and a shield or basket. Figurines of cats, highly adorned with jewelry and other finery, have been discovered in Egypt's tombs as well as paintings of cats hunting with their masters. So you see, Daniel, although we were idolized, we weren't idle by any means—we put ourselves to good, practical uses."

Purring and stroking her whiskers, Daniel's mother made no attempt to suppress her satisfaction at the pun she had made—even though she had made it to each of Daniel's fifteen brothers and sisters before him.

"The penalty was heavy for Egyptians caught killing cats (man in the 20th century could take a few hints from the Egyptians, Daniel), and at the death of a cat, human members of its household cut off their eyebrows to show their grief. Cats were mummified, and gold, gems, and mummified mice, the latter intended for food in the afterlife, were buried along with them."

"How considerate those Egyptians were," remarked Daniel softly.

"It was more than that, son. We were held in reverence by the entire population. Although the Egyptians worshipped many animals, none were worshipped by their millions as consistently and for as long a period as we were."

'CAT FUNERALS WERE SECOND GRADE . . .'

"But back to my story. While first-grade human funerals cost about $1,500, cat funerals were second grade and set the bereaved household back about $500. Our ancestors, from rich and poor homes alike, were buried in cemeteries all over Egypt. Cats from temple palaces were buried in bronze caskets with bronze statues of themselves on top, or they were placed in bronze boxes shaped like themselves. I've never been there—I think they have a rule about live cats—but I've heard the human members of our household talking about these same statues and others that they've seen at Chicago Natural History Museum in its Hall of Egypt. But man hasn't always been good to our ancestors and their memories. In 1895 the remains of 180,000 cats were unearthed from Egyptian tombs and sold for fertilizer at $18.43 a ton, and, what's more, the auctioneer used the body of an embalmed cat as a gavel!"

Daniel shuddered at this disturbing picture, and his mother paused, peering intently at him to make sure he had grasped the significance of her words, before she went on.

"In China, during the Hsia, Shang, and Chou dynasties, which were from 2205 to 225 B.C., sacrificial rites and theatrical ceremonies were held in honor of the cat, and heavy fines were imposed for destroying us, as in Egypt. All through history, we've played a significant role in relation to man. Cat clans in the Teutonic and Celtic countries proudly used the cat as an emblem for their banners. Roman soldiers in 100 B.C. displayed cat figures on shields and flags, as did the Hessians, Cattani of north Britain, and the ancient Burgundians. The last known cat clan is still in operation in the Highlands of Scotland, and since its origin in the middle of the 12th century, it has maintained its motto: 'Touch not the cat bot [without] a glove.' "

"A good piece of advice," said Daniel, who had not yet mastered the art of retracting his claws—much to the dismay of human beings.

'GODDESS OF LOVE'

"Cat worship was prevalent, too, in Norse mythology," continued Daniel's mother. "Freyja, the Norse cat goddess of love, is shown on special occasions being drawn in her chariot by two cats, symbolizing enjoyment of the senses. Norse maidens were married on Freyja's day (Friday) if possible, and if the sun shone during the ceremony it was said that the maidens had taken good care of the cat and fed her well.

BASTET, the Cat Goddess. Ancient bronze sculpture in Hall of Egypt.

"Cats spread to other parts of the world when soldiers and sailors adopted them as mascots to serve as rat-killers aboard ship. We left our mark on the sea-going world too, as you can see in nautical terminology such as 'cat walk,' meaning narrow passage-way; 'cat head,' where the anchor is hoisted; 'catted,' while at sea; and 'cat-o'-nine-tails,' a whip with which sailors were flogged before the mast."

Daniel, who had the youngster's usual enthusiasm for sea-life, began to daydream after his mother's words, but a stern switch

of her tail bought him tumbling down from the ship's mast onto his windowsill perch.

"We've had our crosses to bear, of course —times when man, unable to understand us, has invested us with supernatural qualities or connected us with some of his outlandish superstitions. During the witchcraft days in Europe and America, cats were considered a companion to the witch, and witches' cats were said to have spoken the same language as their mistresses. A common belief at that time was that if an old woman was injured shortly after a cat was injured, the woman was a witch.

"Superstitions about witch cats still persist among the European peasantry, and the old belief that a black cat entering a home endangered the lives of its occupants has been modified to the cat's crossing a human being's path as a symbol either of good luck or bad luck, depending on the section of the world. In this country, unfortunately it's bad luck, and I've seen human guests shudder and recoil upon seeing my late husband enter the living room.

"As to supernatural qualities attributed to the cat, there are some redeeming factors. In ancient Egypt and Japan, spiritualists believed that cats protected them from inimical supernatural forces. Orientals, mainly, credited the cat with occult vision and an ability to see into the past, forecast the future, and perceive objects and beings invisible to man. Even today, our habit of looking steadily into a person's eyes or sitting with half-closed eyes has gained us the reputation of being 'knowing' and meditative. A logical supposition, of course," Daniel's mother added. Daniel nodded.

"During the 17th century we were considered excellent weather predictors. A cat whose foot extended beyond the crown of its head when it was washing itself, a 'bawling' cat, and one with its 'brains to the ground' were harbingers of rain. A cat washing its face toward the wind or an old cat frisking about was taken as an omen of a brewing storm, and a cat sitting with its back to the fire denoted that a frost was coming. At second glance, this folklore isn't as nonsensical as it seems, Daniel. It has been reported that our supersensitive hearing power has enabled us to pick up the ground vibrations that precede an earthquake.

"The superstitions about us that man has created in the past are causes of many false impressions about us today." The mother tabby leaned eagerly toward Daniel because to her this was a most serious subject.

"Although many human beings believe we can see in the dark, we can't, but you may have discovered, Daniel, our eyes are so constructed that a maximum amount of vision is possible with a minimum amount of light. Our eye-surface is exceptionally large in proportion to our bodies and our pupils are highly sensitive. Our pupils shrink to slits in strong light and expand in poor light until they cover almost the entire surface of our eyes."

Seeing that Daniel was preoccupied in rapidly opening and closing his eyes, his mother cleared her throat ominously and continued: "Contrary to popular opinion, cats are among the most intelligent of mammals. Their brains roughly resemble the human brain. And it comes as no surprise, I'm sure, for you to hear that cats have surpassed dogs, raccoons, and rats in intelligence tests, although in all fairness I must say that individual differences exist here as they do in all mammals.

"Although the old ridiculous saying that a cat has nine lives is now treated lightly, many human beings think that a cat can fall many stories without being killed or even injured. Our feline grace and sinewy muscles can save us from harm in a short tumble, but many of us die every year in falls from high places.

"Another common fallacy is the belief that cats and dogs are necessarily incompatible. Personally I would never choose a dog for a close friend, but many cats and dogs get along very amicably after they have become accustomed to one another's idiosyncrasies. I've known several dogs quite well, but I've found it the best policy not to exhibit our superiority, unless absolutely necessary, and to tolerate as best we can their bad manners.

'THEY SELDOM TRANSMIT DISEASES'

"Cats don't carry diseases to any greater extent than does Man, and they seldom transmit diseases to human beings as do dogs and rats. The saliva of a healthy cat is free from bacteria, and if one of us is bitten by another cat the wound is usually clean, while a wound given us by a dog is likely to abscess if not tended properly. Incidentally, when we draw our claws along the bark of a tree or, to human beings' displeasure, along a rug or sofa, we aren't sharpening our claws as many people think. Our claws are shed, as you'll discover, Daniel, throughout the year, and we merely work off loose bits of dead skin from our front claws by scratching them on wood or something similar. We care for our hind claws by removing the bits with our teeth.

"Many human beings think that we're stoic and incapable of showing any degree or variety of emotion. While the great mobility of our eyes and mouths conveys most of our emotions, our ears, too, serve as a valuable barometer of our state of mind. As you may know, Daniel, forward reflects joy; backward, disapproval."

Daniel began to wiggle his ears violently, hoping this action would cause sudden changes of mood but, unfortunately, it didn't.

"Cats have the most delicate sense of touch in the animal kingdom," his mother continued. "While our sense of taste is not as acute as that of the monkey, it is highly developed, and our hearing powers are so extraordinary as to reach far beyond the human range—even to half-tones to which other animals are deaf. The human ear can detect tones as high as 20,000 cycles per second while our hearing reaches cycles as high as 60,000 per second. We have very powerful sight, too, and an ability to distinguish, to some extent, form and color. Though our sense of smell is less acute than that of dogs it tends toward more delicate odors such as perfume, while the dog, as you might expect, prefers carrion smells.

'FELIX CATUS IS CORRECT'

"Although *Felis domestica* is more commonly used, *Felis catus* is the correct zoological term for us. All cats belong to this genus and species. There are no subspecies (varieties) because of our unknown origin. So-called 'domestic' cats are divided into short-haired and long-haired breeds. Shorthairs in the United States include tabbies (that's us) and solid-color and tortoise-shell cats and their derivatives, spotted, smoke, and bobtail. Foreign short-hairs include the Abyssinian ticked, Burmese, Manx, and Siamese. Among the long-hairs are the Persian, Angora, Russian, Burmese, tabby, tortoise-shell, chinchilla or silver, smoke, and peke-faced.

"I'm sorry to say that there is a certain type of human being, existing even today, Daniel, that is called an aelurophobe, which means a person with a morbid fear of cats. And there are (and I know this to be true from personal experience) some souls who simply do not like us—possibly because they believe some of the fallacies that have come down through the ages and haven't taken the trouble to know us. Of course, we're entitled to our personal prejudices too. We can only hope that these unenlightened human beings appreciate the fact that if it weren't for us, mice and rats would be rampant upon the earth. For the many other two- and four-footed mammals that are our admirers, there's a saying by Montaigne I've never forgotten because it reveals such a sharp insight into our personalities: 'When I play with my cat who knows whether I do not make her more sport than she makes me?'"

And so saying, Daniel's mother, after a dramatic pause, looked down expectantly at her son, who, she discovered, was sound asleep.

"Well, maybe I should have waited another month, she thought as she began to give Daniel his afternoon bath.

PREHISTORIC JEWELRY SHOP UNEARTHED

By WENDY C. OLSON
MEMBER, SOUTHWEST ARCHAEOLOGICAL EXPEDITION

IN the 13th century A.D., Moorish artists left their lasting tribute to art in the magnificent halls of the Alhambra. During the same period, on a hilltop overlooking the lush valley of the Blue River in Arizona, the native inhabitants there, too, found a means of artistic expression.

When they first came to the valley 5,000 years ago, the basic living needs of the people

ANCIENT JEWELER'S TECHNIQUE

Photograph shows method used by prehistoric Indian artist in scoring bone to make finger rings. The saws made of chalcedony for scoring the bone are also shown (at lower left, and in use).

were too pressing to allow time for many aesthetic developments. Hunting and gathering, and making the tools necessary for life, occupied their full time. But, little by little, progress was made. They moved from their temporary dwellings into pit-houses. During this time they discovered that by planting and tending seeds they would have a surer supply of food. If the crop were carefully stored, it would provide valuable nourishment for the lean winter months.

In about A.D. 1000 another great change took place; the people began to build "apartment houses" large enough to accommodate the entire community. The massive walls were constructed of large boulders bonded with mud mortar. Firepits were carefully constructed of fitted slabs. When the grain and game had been gathered and stored in the sturdy homes, there was spare time for the people to devote to arts and crafts. We have found the tools of one such artisan.

Perhaps his hearth was not as painstakingly made as those of his neighbors, and the walls of his home were in rather bad repair, but he was a craftsman! His equipment was entirely a matter of "do-it-yourself" with the raw materials nature had provided. A sharp, efficient awl could be fashioned from a bone split lengthwise with a chipped flint saw. A sandstone slab, with a groove worn on one surface, provided an excellent sharpener. A combination of hearth ashes, water, and hard rubbing resulted in an eye-pleasing polish. A saw was required to manufacture a shell bracelet. The aboriginal jeweler solved the problem by chipping several "teeth" on a piece of flint. To make a bone ring, a deer's leg bone was sawed cross-wise into many rough "blanks." Each blank was smoothed with sandstone, so well and so highly polished that anyone would have been proud to wear the finished product.

There are no written records of this man. The few mute stones and bones recovered by Chicago Natural History Museum's expedition are enough to tell the story.

The Museum's annual Southwest Archaeological Expedition, at work near Reserve, New Mexico, is under the direction of Dr. Paul S. Martin, Chief Curator of the Department of Anthropology. He is assisted by Dr. John B. Rinaldo, Assistant Curator of Archaeology. Other members of the expedition are Mrs. Martha Perry, Chicago;

DISCOVERY

Mrs. Alan P. (Wendy) Olson, member of the Southwest Archaeological Expedition and writer of the accompanying account of its work, clears a slab-lined firepit in the ancient Arizona Indian ruins. An ax and other artifacts have been uncovered.

Roland Strassburger, Northbrook, Illinois; David Collier, Chicago; Robert Lamb, an Antioch College student; and Mr. and Mrs. Alan P. Olson, students at the University of Arizona.

Daily Guide Lectures

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 5 P.M.

NATURE PHOTO CONTEST GETS UNDER WAY

Now is the time to begin selecting your best summer vacation photographs of scenery, animals, plants, and other natural phenomena for entry in the Chicago International Exhibition of Nature Photography.

The exhibit, eleventh in the annual series under the sponsorship of the Nature Camera Club of Chicago, will be held in Stanley Field Hall of the Museum from February 1 to 28 next year. Color slides will be projected on the screen of the James Simpson Theatre on two Sunday afternoons during that period.

Final deadline for entries will be January 16. Early entries are encouraged both for the benefit of contestants and to facilitate the work of classifying and filing that must be done by the contest committee. The competition is open to both amateur and professional photographers. It is the world's largest contest devoted exclusively to nature photos, and one of the largest photographic contests of any class.

There are two divisions of entries—prints, and color slides. In the print division, photographs may be either black-and-white or in color. In both divisions, to meet eligibility requirements, entries must fall within one of three sub-classifications: (1) Animal Life, (2) Plant Life, or (3) General. The General section includes scenery, geological formations, clouds, and other natural phenomena that do not fit into the animal and plant life sections.

Medals and ribbons will be awarded in each classification of each division, and in addition, there will be special prizes awarded by the Photographic Society of America. Each contestant is entitled to submit up to four entries in each division of the contest.

Detailed information will be found in the entry forms which may be obtained by request to the Museum. Photographs should be sent directly to the Museum.

Seasonal Change in Visiting Hours

Autumn visiting hours, 9 A.M. to 5 P.M., will go into effect at the Museum on September 6, the day after Labor Day. The new schedule will continue until October 14, after which the hours will be 9 A.M. to 4 P.M. (5 P.M. on Sundays).

Four Museum halls devoted to various phases of economic botany emphasize how much the human race is dependent upon plants, not only for food but also for shelter, clothing, and many of the comforts of life.

The giant clam of the Pacific and Indian oceans, largest known bivalve, is represented in Hall M by an example about two feet ten inches long.

SHOTS IN THE NIGHT—FROM A CAMERA BLIND

One of the highlights of the recent Southwestern Zoological Field Trip was an opportunity to photograph mule deer from a special blind at the Arizona-Sonora Desert Museum near Tucson. The blind, designed and built by Lewis W. Walker of the Desert Museum staff, is one of the features of that institution. The following article describes a night in the blind.

By D. DWIGHT DAVIS
CURATOR OF VERTEBRATE ANATOMY

IT WAS CRAMPED inside the blind now that it was dark, and the three of us sat there in the blackness, peering through the slots like gunners in a bomber. I scarcely dared move for fear of joggling the cameras I had carefully set up while there was still light. At my elbow Elliot Porter, the well-known bird photographer, was a shadow in the faint light coming through the slot in front of his camera, and Lew Walker, on the other side of Porter, was only a disembodied voice behind the dim rectangle of the third slot.

RIG FOR NIGHT PHOTOGRAPHY OF ANIMALS
Permanent blind for battery of cameras at Arizona-Sonora Desert Museum.

Through the opening in front of my own cameras I could see that the sky was still faintly luminous, making the light from the seven-watt bulb suspended over the tiny pool of water out front look yellow and artificial. The pool itself was a few inches deep and scarcely three feet across, and we could spit into it from where we sat. The blind towered over it, a mass of lumber studded with a dozen metal reflectors for the flashbulbs and with four camera slots across the front like the vertical slits in a cat's eyes.

Even in the desert it seemed preposterous to expect deer and javelina to ignore so obvious an ambush, and I might have thought Lew was crazy if I had not seen magnificent pictures he had made from this same blind. We had scarcely settled down before footsteps sounded on the hard ground outside, and I wondered who was barging in to spoil whatever chances we had of getting a picture.

"Here comes a deer," Lew whispered, and I was astonished that a deer made so much noise and glad I had not made some stupid remark about the intruder. "It's a doe. She's coming in behind the saguaro."

Then the deer stepped into the light and I saw her, huge ears tensed forward and eyes fixed on the blind. She looked nervous and suspicious and I could scarcely believe she would come on in, but she ducked her head and inched forward and in a moment was standing at the edge of the pool, head up and staring me straight in the eye. A piece of cholla dangled from her chin. There was exactly ten feet between us, but I felt I could reach through the window and touch her, and in the faint glow of the tiny bulb she looked as big as a mastodon.

"Wait until she starts to drink," Lew whispered slowly, "then open your shutters. I'll fire the flashbulbs when she raises her head." One of the big ears twitched and she turned her head slightly. I expected her to bolt, but a moment later she lowered her head and began to drink.

"Ready?" Lew whispered.

"I'm open," Porter breathed.

I pressed the release to open the shutter of the Exacta and in the dead silence it clanged like a sledge striking an anvil. The deer bolted and was gone in a sickening clatter of stones long before Lew had a chance to fire the flashbulbs. I felt like crawling out of the blind and going home.

"It sounds like a boiler factory in here," Lew said aloud, and his voice startled me after the tense silence. I joined in the laughter without feeling any mirth.

"She'll be back," he went on. "You'd better open that shutter earlier. You can stay open for about fifteen minutes without rocks showing through the deer's stomach." I was determined not to foul up the next one even if it meant not using the Exacta. Then I found a letter in my shirt pocket that I could use to screen the lens, and the nervous sweat began to dry on my forehead.

THE DOE RETURNS

In a few minutes the doe was back, the piece of cholla still hanging from her chin. Lew said "Okay, let's watch that shutter." She drank a little, then raised her head and stared off to the left, tense and alert. There was a blinding flash as the four flashbulbs in the first bank went off, and Porter and I exhaled together. Unless I had boggled in the darkness I had something on the films.

"She wasn't through drinking," Lew said. "I think she'll come back. We've got two more shots before we have to reload the reflectors."

We shot the same doe twice more before she left for good, the piece of cholla still there. On the first few shots I was sure I was bungling something in the darkness, but by the time we went out to replace the flashbulbs I was confident I couldn't be missing with both cameras and the sweaty uncertainty was pretty well gone. Back in the blind we talked until the gravel rattled again and made us stop the conversation abruptly. A moment later a venerable old doe walked into the light on legs a little stiff with age.

"Oh, that's old Susie," Lew said aloud, startling me but not the deer. "She comes in every night. We don't want her—come on, get going, Susie!" The old lady looked at the blind a moment, then quietly turned and walked away without drinking.

A SKUNK INTRUDES

There was a long silence, punctuated by the cries of elf owls, before rattling gravel brought us to attention again. We were looking for another deer, but instead a hooded skunk came in from one side and made straight for the can of horse meat buried beside the pool to encourage carnivores. The poor devil was having trouble managing his hind quarters and was obviously badly crippled. "Probably hit by a car," Lew said. "He's no good for a picture."

We watched the skunk go to work on the bait can with frenzied determination. Porter and I felt sorry for him and cheered him on, but he ignored us. Lew cursed him because he had baited the can for ring-tailed cat. Then footsteps sounded in the darkness beyond the light and somebody said "Sh!" A moment later we could see the legs of a deer coming in, very hesitantly because of the skunk.

"There's two of them," Lew whispered. "I can just see the second one."

They edged in closer, holding back because of the skunk, still out of range of the cameras and partly hidden behind a bush. I got a momentary clear view of the lead animal's head, enough to glimpse a pair of antlers.

"The first one's a buck," I whispered. "About four points." Porter was twisted to one side, peering past his camera into the background.

"There's a third deer back behind the saguaro," he announced. Things were looking up. A chance of shooting a buck

and a pair of does in one group was far better luck than we had dared hope for.

"Damn that skunk," Lew said. "They're afraid of him. They may not come in."

The deer milled around slowly behind the pool, eyes on the skunk. Then the buck began to move up, one of the does at his flank, and we waited tensely.

"This may be good," Lew whispered. "I'll shoot the lights if anything develops."

PLANS GO AWRY

Suddenly the skunk backed away from the bait can with a huge piece of meat in his jaws and moved off into the shadows as triumphantly as his crippled legs allowed. The deer were still nervous. We passed a couple of fair shots waiting for the trio to group into something good. Then one of the does moved off and we knew we had muffed it. The flashbulbs fired just as the buck turned to leave.

"That was a poor shot," Lew said. "I was afraid we would end up with nothing if we waited too long. I've done that more than once."

"Do you think they will come back?" Porter said.

"I doubt it. It's nearly midnight and there won't be much activity now until just before daybreak." He began to maneuver his lanky frame from behind his camera. "I'm going to have a cup of hot cocoa and turn in."

Porter and I waited another hour, during which nothing happened. We had sat in

SURPRISE!

One of the Sonoran mule deer that visited the water hole in front of the Desert Museum blind. Hanging from the animal's chin is a piece of cholla.

the blind five hours and had shot six deer pictures with each of the three cameras, eighteen exposures in all. I was so stiff I could hardly move.

"The show seems to be over," I said. "I would sit here for the rest of the night if there was a chance of shooting a javelina."

"So would I," said Porter. "But you know, I'll bet Walker left some of that cocoa warming on the stove."

We climbed out of the blind and went up to the house in the darkness. Sure enough he had.

FALL LECTURES AND FILMS TO BEGIN OCTOBER 1

The autumn course of free illustrated lectures for adults on Saturday afternoons —the 104th lecture series to be offered by the Museum—will begin on October 1. There will be lectures, at 2:30 P.M., on each Saturday throughout October and November.

The opening lecture (October 1) will be "Between the Tides," by Robert C. Hermes of the National Audubon Society. Mr. Hermes' color motion pictures and his narrative tell the story of the "in-between world inhabited by in-between creatures, those that never seem quite able to decide which is lovelier, the land or the sea, or where they'd rather be." His scenes range from the coral shores of the Bahamas to Nova Scotia's fishing villages, and from San Francisco's foggy harbor to Hawaii's sun-drenched beaches. He pictures the drama in the weird life-cycles of strange creatures that live as "beachcombers" between the tides. Flying sea-birds and wading shore birds, ghost and fiddler crabs, and mysterious dwellers from beneath the seas trapped in tidepools all appear in this fascinating film.

Second lecture of the season, on October 8, will be "The Land the Glaciers Forgot," by Howard L. Orians. In color films and lecture Mr. Orians strips away the technical approach with which his subject is usually treated. He presents the story of a curious geological phenomenon—the occurrence in the Middle West of a huge area that was completely by-passed by the great glaciers of the Ice Age. This has resulted in a terrain that contrasts with other parts of the region.

A schedule of the other seven lectures in the series will appear in the October issue of the BULLETIN. For all the progams, a section of the Theatre is reserved for Members of the Museum, each of whom is entitled to two reserved seats. Requests for reserved seats should be made in advance by telephone (WAbash 2-9410) or in writing. Seats will be held in the Member's name untill 2:25 o'clock on the day of the program.

One of the rarest and most curious plants in the world, the giant welwitschia from the Mossamedes Desert of Africa, is displayed in a habitat group in Martin A. and Carrie Ryerson Hall (Hall 29).

MEMBERS' NIGHT OCT. 7

(*Continued from page 2*)

Southwest led for many years past by Dr. Paul S. Martin, Chief Curator of Anthropology. The second diorama represents a village of the Hohokam Indians at about A.D. 800 to 900 in the desert between Tucson and Phoenix, Arizona. The third is a miniature reconstruction of Pueblo Bonito in New Mexico, about A.D. 1100, showing tribesmen performing ceremonial dances to propitiate the rain gods. The three dioramas were prepared by Alfred Lee Rowell, of the Department of Anthropology staff.

CAFETERIA; SPECIAL BUSES

Although the Members' Night program does not begin until 7 P.M., the doors of the Museum building will be open from 6 o'clock on. For those who wish to dine at the Museum, the Cafeteria on the ground floor will offer its services at regular prices from 6 to 8 P.M.

There is ample free parking-space at the north of the Museum building. For those who do not wish to drive their cars, special free motor-bus service has been arranged. A special bus marked to indicate Museum shuttle-service will leave Jackson Boulevard at State Street at 15-minute intervals beginning at 6:30 P.M. The last bus will leave the Museum at 10:45 P.M. In both directions the bus will make an intermediate stop at 7th Street and Michigan Avenue. This transportation is free—no fares collected, no transfers required.

WILD FLOWER PICTURES IN SEPTEMBER SHOW

The mystery and enchantment of the woods, their wild flowers and animals, will be found in Stanley Field Hall throughout the month of September when a collection of 50 color photographs goes on special exhibit.

The work of Jeannette Klute, research photographer for the Eastman Kodak Company, the photographs are the originals of the pictures that compose Miss Klute's recent book, *Woodland Portraits*, which is also the title of the exhibit. A talented photographer and a lover of nature, Miss Klute has exhibited in leading museums and galleries throughout the United States and Europe. The plants shown in the exhibit were photographed in their natural habitats and in natural lighting to suggest the moods one might feel while walking through the woods.

The fifty color photographs consist of woodland plants and animals seen in early spring and continuing through summer and autumn. Prints shown are approximately 11 by 14 inches. Miss Klute's book, *Woodland Portraits*, also will be on sale in the Museum Book Shop.

MOVIES FOR CHILDREN ON NINE SATURDAYS

Free programs of motion pictures for children will be presented in the James Simpson Theatre of the Museum every Saturday morning during October and November under the auspices of the James Nelson and Anna Louise Raymond Foundation. The shows begin at 10:30 A.M.

First program, on October 1, will be "Neptune's Children," the story of the seas, the tides, and the strange animal life found on beaches and in tidepools. Robert C. Hermes of the National Audubon Society, who made the pictures, will tell the story to the audience of youngsters.

On October 8 a film of Southwest Indian life, "Pueblo Boy," will be shown. No tickets are needed for the movies. Children are welcome either alone, accompanied by parents or other adults, or in groups from schools, clubs and other centers. A schedule of the other seven programs will appear in the October BULLETIN.

BIRD FILM STRIPS AID TEACHING

BIRDS. How They Live and Help Us. Five film strips with photography and text by Mrs. Allan D. Cruickshank, issued by the Society for Visual Education, Inc., Chicago. Complete set of five strips, $23.75; singly, $5.

These five film strips are rolled lengths of 35mm color film of about thirty color pictures and captions of birds each, with from six to twelve frames of text. The advantages of these strips over individual slides is that the pictures don't get out of order and the demonstrator needs no knowledge of the subject or preparation—only the ability to read the captions under the pictures and the text as they are flashed on the screen. For a classroom lecture, film strips are a package deal, and probably 90 per cent of teachers would prefer them to slides. That they need a special projector and that they are inflexible are disadvantages. If the demonstrator knows his subject and wants to adapt his lecture to local conditions, he is stymied.

Film strips are coming into wider and wider use. Locally, schools, especially the lower grades, are building up libraries of film strips. In the foreign-mission field Dr. Robert L. Fleming, Field Associate of the Museum, tells me that in India film strips are now being used as visual aids in teaching.

The present five film strips are as follows:

(1) Birds of the ocean, its beaches, and salt marshes (ranging from pelicans and flamingoes, to plovers, terns and auks)

(2) Birds that live near people (ranging from barn owls, to swallows, robins, blue jays, starlings, etc.)

(3) Birds of ponds and marshes (grebes, ducks, rails, yellowthroats, herons, etc.)

(4) Birds of the forest and its borders (turkeys, warblers, woodpeckers, chickadees, vermillion flycatchers, etc.)

(5) The migration of birds (loons, cranes, sparrows, swans, swallows, terns, etc.)

The first frame or two of text introduces the pictures. Each picture has a two-line caption. A few frames of text are scattered through the film strip, and the strip concludes with two frames of text that include questions students can answer either from the film or from outside reading.

The text presents a problem. To get a pertinent idea across in a line or two for bird after bird is as difficult as it is in a synoptic series of museum exhibits. In general the text is very well done, and the pictures are excellent.

AUSTIN L. RAND
Chief Curator of Zoology

Technical Publications

The following technical publications were issued recently by Chicago Natural History Museum:

Fieldiana: Zoology, Vol 34, No. 31. *A New Species of Thrush from Angola.* By Austin L. Rand. April 18, 1955. 3 pages. 10c.

Fieldiana: Zoology, Vol. 37. *Karl Patterson Schmidt Anniversary Volume, In Honor of His Sixty-fifth Birthday.* By twenty-seven contributors. June 19, 1955. 728 pages, 178 illustrations.

Fieldiana: Geology, Vol. 10, No. 20. *Fauna of the Vale and Choza:*10. By Everett Claire Olsen. March 30, 1955. 51 pages. 85c.

Fieldiana: Botany, Vol. 29, No. 2. *Revision of the Hawaiian Members of the Genus Tetraplasandra A. Gray.* By Earl Edward Sherff. July 29, 1955. 92 pages.

NEW MEMBERS

(July 18 to August 15)

Associate Members

Dr. John V. Belmonte, Harold A. Liebenson, Bolton Sullivan

Sustaining Members

Silas S. Cathcart, Joseph E. Guilbault

Annual Members

A. B. Bagley, Charles Bonifield, Ernest J. Carr, Frederick A. Delaney, Mrs. Harry Edward Eaton, Earl D. Eisenhower, Dr. Richard W. Fey, Henry C. Frost, E. Ross Gamble, Dr. Stanford R. Gamm, Dr. John H. Garwacki, Herman Harris, Irving L. Hertzman, John A. Hutchings, Otto Janes, Richard E. Karklin, James P. Maher, Charles M. Mason, Robert J. McGreevy, Mrs. Howard B. Menzner, Roy B. Munroe, Leonard Nathan, Madison P. Neilson, Walter Nietschmann, Walter J. Peterson, Paul B. Shoemaker, David B. Smyth, E. Courtney Sorrells, Mrs. Walter D. Steele, Charles H. Vihon, B. Stuart Weyforth, Jr., Thomas M. Whitson, V. O. Winkenweder

GIFTS TO THE MUSEUM DURING PAST MONTH

Following is a list of principal gifts received during the past month.

Department of Anthropology:

From: Richard A. Pohly, Tulsa, Okla.—pre-Columbian clay figurine, Venezuela; Frank Varley, Toronto, Canada—carved whale of walrus ivory

Department of Botany:

From: Robert Becker, Chicago—a Geranium Robertianum, Wisconsin; Holly R. Bennett, Chicago—615 miscellaneous phanerogams, Michigan, Illinois, Indiana; Milton Carleton, Chicago—2 Arachis, Georgia; William Bridge Cooke, Cincinnati—1 alga, California; Division of Plant Industry, Australia—39 samples of agricultural legume seeds; K. C. Fan, Chicago—a Myriophyllum tuberculatum, China; Dr. Clark Finnerud, Chicago—2 photographs of Orchis rotundifolia; Dr. L. J. Gier, Liberty, Mo.—23 plants; Dr. Walter Kiener, Lincoln, Neb.—26 algae; Dr. E. P. Killip, Washington, D. C.—56 phanerogams, 5 cryptogams, Cuba; Kendall Laughlin, Chicago—4 Crataegus (type material); J. R. Lewis, Leeds, England—14 algae; University of Notre Dame, Indiana—16 cryptogams; Dr. Karl P. Schmidt, Homewood, Ill.—an Illinois plant; C. Sbarbaro Spotorno, Savona, Italy—100 cryptogams

Department of Geology:

From: Chicago Aerial Survey Co., Chicago—photo print of the Ship and Sag Canal area

Department of Zoology:

From: John Cuneo, Libertyville, Ill.—kangaroo, Australia; Dr. Henry Field, Coconut Grove, Fla.—56 lizards, 9 snakes, frog; Harry Hoogstraal, Cairo, Egypt—43 lizards, 4 snakes, 2 turtles, eastern Africa; Karl Ludwig Koch, Germany—birdskin, Madagascar; Lincoln Park Zoo, Chicago—2 turtles, snake, lizard, Madagascar; U.S. Fish and Wildlife Service, Pascagoula, Miss.—46 fishes, Gulf of Mexico; August Ziemer, Evergreen Park, Ill.—collection of fresh-water shells; Mac Hardy, Garfield, Ark.—3 garter snakes; Chicago Academy of Sciences—4 lizards, Hawaii; Chicago Zoological Society, Brookfield, Ill.—4 mammals, Africa; Henry Dybas, Hazelcrest, Ill.—536 insects, Indiana, Kentucky, Tennessee; Dr. Alfred Heinzelmann, Piura, Peru—11 small rodents; Dr. H. Holub, Indonesia—turtle, lizard and jungle cat; Dr. William W. Milstead, Alpine, Texas—419 frogs, 61 lizards, 23 snakes, Brazil; Musée Royal du Congo Belge, Tervuren, Belgium—36 staphylinid beetles, Belgian Congo; William H. Phelps, Caracas, Venezuela—7 birdskins; Dr. Gerald Scherba, Chicago—a salamander, Mexico; Shedd Aquarium, Chicago—2 fish specimens

Library:

Books from Harry G. Nelson, Harvey, Ill.

The giant pirarucu of the Amazon, one of the largest fresh-water fishes of the world, is shown in Hall O.

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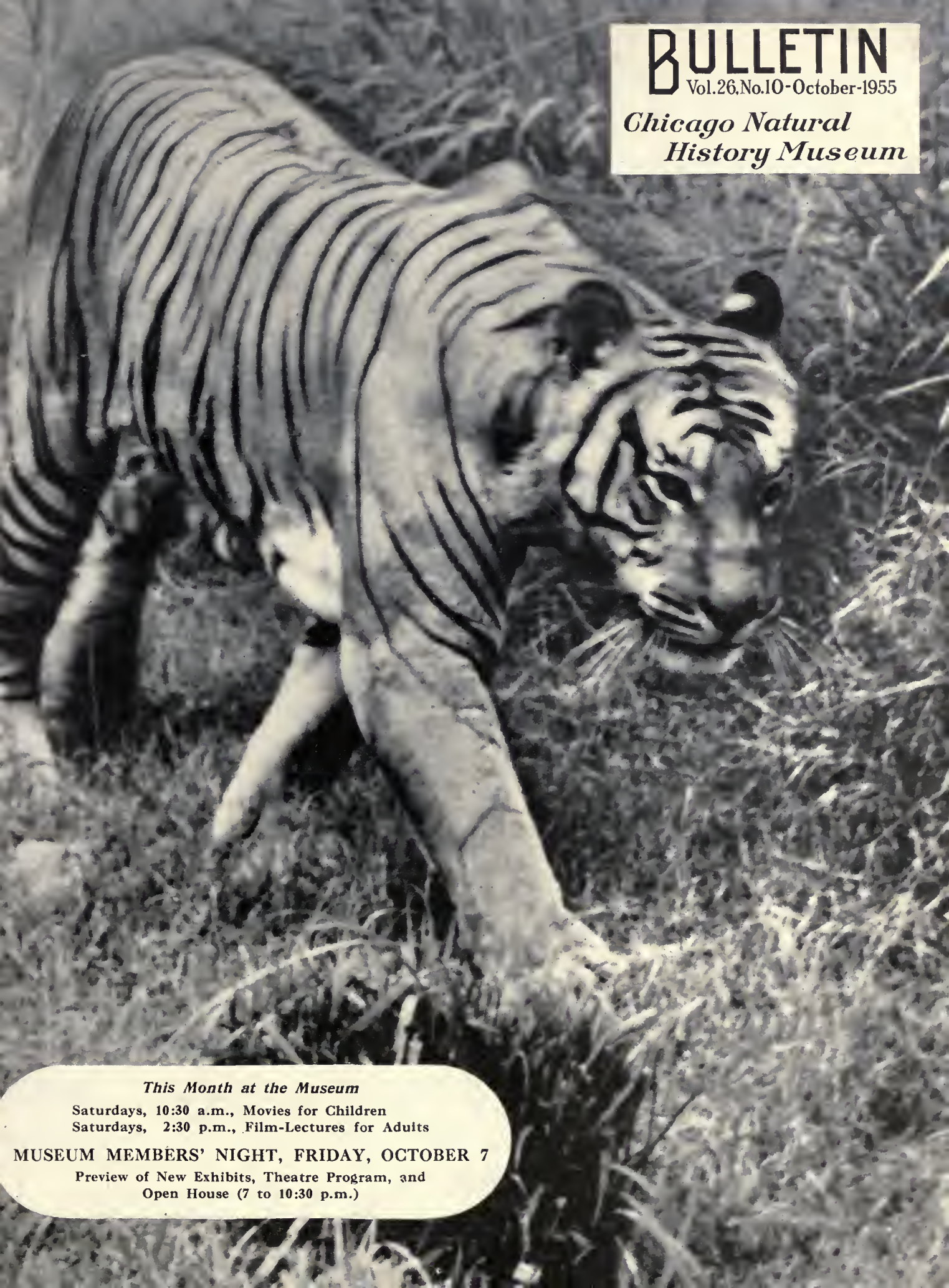

This Month at the Museum

Saturdays, 10:30 a.m., Movies for Children
Saturdays, 2:30 p.m., Film-Lectures for Adults

MUSEUM MEMBERS' NIGHT, FRIDAY, OCTOBER 7

Preview of New Exhibits, Theatre Program, and
Open House (7 to 10:30 p.m.)

You Are Cordially Invited . . .

OPEN HOUSE, FILMS, AND EXHIBIT PREVIEWS ON MEMBERS' NIGHT, FRIDAY, OCTOBER 7

THE THEME of **Members' Night,** which this year occurs on **Friday, October 7,** is The Earth. All the basic facts about this whirling chunk of solar system we inhabit—its origin, its structure and composition, what its interior is like, the nature of its surface, its age, how and why its face is constantly changing, the forces that act upon it from within and without—are graphically presented in a series of 37 exhibits in the new Hall of the Earth (Hall 34, Physical Geology) on the second floor of the Museum. A preview of this hall is the feature of Members' Night.

In the center of the new hall are four spectacular dioramas. In three of these, while visitors watch, the light changes to simulate in a fascinating way variations in appearance that occur with the changing time of day. One diorama illustrates the effects of stream erosion with a model of a scene in the Grand Canyon of Arizona. Another diorama shows what a glacier is, how it acts, and what it does to topography. A third diorama illustrates the processes by which volcanoes come into being and their activity and its effects. The fourth diorama, representing the interior of a cave, demonstrates the solvent action of ground waters.

Many of the exhibits in the hall are given to a comprehensive exposition of the subject of rocks. From these exhibits the differences between igneous, sedimentary, and metamorphic rocks become instantly clear to the layman. The factors that characterize each are impressed upon the visitor in a way possible only by visual methods with three-dimensional actual specimens accompanied by explanatory material.

Other New Exhibits—

Also on Members' Night the Department of Anthropology will present in Hall 7 (Ancient and Modern Indians of the Southwestern United States) three new dioramas. One, based on findings of the more than twenty years of the Museum's archaeological expeditions to the Southwest, depicts a village of the prehistoric Mogollon Indians. These Indians, who have been traced back some 4,500 years by Dr. Paul S. Martin, Chief Curator of Anthropology, and his associates, are represented at the stage of development reached about A.D. 300. Second of the dioramas, representing a desert tribe—the Hohokam—who lived in the area between Tucson and Phoenix, Arizona, shows the type of village inhabited about A.D. 950. A vivid representation of ceremonial dances for the rain gods is represented in the third diorama, which shows the famous Pueblo Bonito in New Mexico as it is believed to have been about A.D. 1100.

Also to be on public view for the first time will be an exhibit in Hall 20 (Habitat Groups of Birds) of the Department of Zoology. In this exhibit, which demonstrates iridescence in hummingbird feathers by a clever combination of mounted specimens and especially devised lighting, each of eight birds is spotlighted automatically, one after the other. Then these lights go out and general lighting comes on. This alternating cycle is repeated over and over.

Open House—

Open house on Members' Night has always been popular, and again Members are invited to enter the areas of the ground, third, and fourth floors where "No Admittance" signs usually bar the public from laboratories, studios, workshops, and curators' offices. All members of the scientific staff as well as taxidermists, artists, preparators, dioramists, and other technicians will be present to greet the visitors and to explain the intricacies of their varied specialties. Most of these people are engaged in unusual types of occupations not to be found anywhere else except in another natural history museum, and they will demonstrate what they do and explain the whys and hows. The sanctums of all departments and divisions—Anthropology, Botany, Geology, Zoology, Library, Harris Public School Extension, and others—will have the welcome sign on open doors. For those anxious to conserve time and have their progress expedited, small conducted tour-groups will be escorted at frequent intervals by the seven young women who are guide-lecturers on the staff of the James Nelson and Anna Louise Raymond Foundation. Those Museum Members and their guests who prefer to wander independently through the behind-the-scenes areas are welcome to do so.

Theatre Program—

At 9 P.M. in the James Simpson Theatre there will be a program featuring a lecture with color films by Dr. Sharat K. Roy, Chief Curator of Geology. Dr. Roy recently returned from an expedition to study volcanoes in Central America. He will give you a glimpse of Central America and tell of his experiences relating to volcanoes and volcanism. The program will be rounded out with other motion pictures on geological subjects, including "In the Beginning," the dramatic story of the formation of the earth as revealed in the Grand Canyon of Arizona (this film is presented through the courtesy of the General Petroleum Corporation).

Cafeteria; Special Buses—

Although the Members' Night program does not begin until 7 P.M., the doors of the Museum building will be open from 6 o'clock on. For those who wish to dine at the Museum, the Cafeteria on the ground floor will offer its services at regular prices from 6 to 8 P.M.

There is ample free parking-space at the north of the Museum building. For those

(*Continued on page 8, column 3*)

THIS MONTH'S COVER

The tiger on our cover, walking out of the jungle apparently right into the camera (and camera man!) is one of the thrills awaiting those who attend the series of film-lectures on Saturday afternoons in October and November in the Museum Theatre. This majestic creature is one of the "stars" among the many wild animals appearing in John Moyer's new film, "Shikar in India," to be given on the third program, October 15. Details of lectures, films, and speakers for the entire season will be found on page 9.

Chicago Natural History Museum

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Roosevelt Road and Lake Shore Drive, Chicago 5

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DIORAMAS TELL STORY OF ANCIENT SOUTHWEST INDIANS

By ELAINE BLUHM
ASSISTANT IN ARCHAEOLOGY

LIFE as it was lived centuries ago in villages of prehistoric Indians of the Southwest is vividly portrayed in three miniature dioramas just completed at the Museum.

After a preview of these exhibits for guests of the Museum on Members' Night, Friday, October 7 (7 to 10:30 p.m.), the dioramas will be on permanent display for the general public.

Preparation of these exhibits has been the major task for the past two years of Alfred Lee Rowell, Dioramist in the Department of Anthropology. The dioramas show three different prehistoric cultures, three different prehistoric periods, and three different environments of the Southwest. They are installed in the central part of Hall 7 (Ancient and Modern Indians of the Southwestern United States).

Dioramist Rowell modeled the foregrounds, painted the backgrounds, and, by the use of special modeling and casting techniques, created the figures and accessories. The curatorial staff of the Department of Anthropology supplied the research and information required to reconstruct the prehistoric cultures and environments.

MODEL OF PUEBLO BONITO IN CHACO CANYON, NEW MEXICO

One of new dioramas in Hall 7 of prehistoric Indians of the Southwest. Kokochi kachina dancers and clowns in foreground are performing rain ceremonies

MOGOLLON PIT-HOUSE

The first diorama shows part of a pit-house village of the Mogollon Indians who lived in the mountainous area of west-central New Mexico and eastern Arizona. The Mogollon culture has been studied by archaeological expeditions of Chicago Natural History Museum for the past sixteen years. The part of the village shown in this diorama was excavated by Dr. Paul S. Martin, Chief Curator, and his staff in 1939 and 1940. The village, located on a ridge in the pine forest, was occupied between 200 B.C. and A.D. 500. The houses were pit-houses—pits roofed with poles and mud. The diorama shows one completed house and one under construction.

The second diorama shows part of a Hohokam village in the desert near Phoenix, Arizona, as it must have looked about A.D. 950. The Hohokam Indians were farmers who constructed a network of irrigation canals in order to raise crops in the desert area of southern Arizona. The village shown in the diorama is Snaketown, excavated in 1934 by the staff of the Gila Pueblo, under the direction of H. S. Gladwin.

COURT FOR BALL GAME

Snaketown was a village of some importance. In the town was a ball court, shown on the background of the diorama, where we believe the Indians played a game related to that played by the Mayas in meso-America. Hohokam houses were built in pits and roofed over with poles and mud. Ramadas, or shades, of poles and leaves provided pleasant working-space outside of the houses. Refuse accumulated in large piles outside the village's "residence area."

The third diorama is a model of Pueblo Bonito, an Anasazi village in Chaco Canyon. The Anasazi were the Pueblo farmers of the plateau area of northern New Mexico and Arizona, southeastern Utah, and southwestern Colorado. Pueblo Bonito, the largest pueblo apartment house in the Southwest, was excavated by the National Geographic Society Expeditions under the direction of Dr. Neil M. Judd. The village was D-shaped and the houses rose to a height of four stories in front of the cliff. Inside, around the plaza, were kivas, or ceremonial rooms, which were entered by ladders from the roof. It is estimated that at one time 1,200 people lived in the pueblo.

DANCE TO BRING RAIN

This diorama shows the pueblo as it must have looked about A.D. 1125. In the plaza Indian men are doing a Kokochi dance. This dance takes place in the summer, after the summer solstice (June 21) and is designed to bring rain and happiness to the people. The Kokochi kachinas wear kilts, and their bodies are painted with pink clay. Opposite them dance the kachina maidens, men dressed as women in black dresses. Also in the line are two Upoyona or Cotton-head kachinas with long blue snouts on their masks, and at the head of the line is a priest wearing no mask, who leads the dance and sprinkles sacred corn-meal from the bowl he is holding. The Mud-head kachinas in black kilts with masks and bodies covered

(*Continued on page 8, column 3*)

MUSEUM MEMBERS' NIGHT
Friday, October 7

THESE ARE YOUR HOSTS FOR MEMBERS' NIGHT

A HUNDRED AND FIFTY or more Museum people will be on hand to greet guests at the Museum Members' Night festivities on Friday evening, October 7. Unfortunately, it is possible to introduce here only a few of these people who keep the Museum going. They will be found in their own offices, laboratories, and studios, or, on Member's Night, in the exhibition halls and the Museum Theatre.

Hosts for the Museum at large will be the Director, Colonel Clifford C. Gregg, and the Deputy Director, John R. Millar. In their case, introductions are superfluous because these men, in their administrative capacities, maintain relations between the Museum and its Members or between the Museum and the public. We pass directly, therefore, to the cloistered quarters of the scientists, artists, and technicians, most of whom are located on the third floor, with a few occupying ateliers on the ground floor and on the fourth floor.

Department of Anthropology—

Your host in this department will be Dr. Paul S. Martin, Chief Curator, who can find the concealed burial place of a centuries-dead Indian or a deposit of prehistoric artifacts like a Geiger counter can locate radio-activity. For more than twenty years Dr. Martin's major task has been the leadership of the Museum's Southwest Archaeological Expeditions. His discoveries and research have opened new vistas reaching back thousands of years in life among America's earliest aboriginals. Associated with him in this task are three divisional curators: Dr. Donald Collier, George I. Quimby, and Dr. John B. Rinaldo. Proving that women, too, can have a flair for archaeology is a more recent addition to the staff in the person of Miss Elaine Bluhm. The Division of Asiatic Archaeology and Ethnology is the province of Curator M. Kenneth Starr.

Paul S. Martin

Department of Botany—

The Museum has acquired a special status among its sister institutions of other cities—it is the only general museum that has given exhibition space to the Plant Kingdom comparable with that devoted to other branches of natural history. The Museum's Chief Curator of Botany is Dr. Theodor Just, who came here from a professorship at the University of Notre Dame (home of "the Irish"). Backing scientific integrity with audacity, he has not hesitated on a St. Patrick's Day to proclaim that there is no such thing as an authentic shamrock per se. Born in Austria, Dr. Just began his scientific career at the Museum of Natural History in Vienna. He specializes in fossil gymnosperms, particularly cycads, their distribution and their evolutionary history. His four principal associates are Dr. Julian A. Steyermark, curator in charge of flowering plants; Dr. Francis Drouet, curator in charge of cryptogamic botany (mosses, algae, etc.); Dr. John W. Thieret, Curator of Economic Botany; and Emil Sella, Curator of Exhibits.

Theodor Just

Department of Geology—

Dr. Sharat K. Roy, born in India, chose an extreme opposite type of area for professional specialization—his principal expeditions and researches have been in the Far North—Newfoundland, Labrador, and Baffin Island. However, he has also made extensive volcanological and seismological investigations in Central America. Assisting him in the reception of visitors will be four paleontologists: Dr. Rainer Zangerl, Curator of Fossil Reptiles; Dr. Eugene Richardson, Jr., Curator of Fossil Invertebrates; Dr. Robert H. Denison, Curator of Fossil Fishes; and William D. Turnbull, Assistant Curator of Fossil Mammals. Guests will be received also by Harry E. Changnon, Curator of Exhibits.

Sharat K. Roy

Department of Zoology—

New as a department head (having been appointed Chief Curator only last July) but already widely known for his work at the Museum since his appointment in 1947 as Curator of Birds is Dr. Austin L. Rand. He was named Chief Curator upon the recent retirement into curator-emeritus status of his predecessor, Dr. Karl P. Schmidt. A Canadian by birth, Dr. Rand has ranged many parts of the world for other museums as well as this one in the conduct of scientific expeditions. His popular stories about various birds, which appear regularly in the Museum BULLETIN and other publications and have been collected in two volumes, give him a unique place among ornithologists. He now directs the largest department staff of the Museum, among the members of which are Colin C. Sanborn and Philip Hershkovitz in the Division of Mammals; Emmet R. Blake, Curator of Birds; Loren P. Woods, Curator of Fishes; Rupert L. Wenzel, Curator of Insects, and Associate Curator Henry S. Dybas; D. Dwight Davis, Curator of Anatomy; Dr. Fritz Haas, Curator of Lower invertebrates; and Dr. Robert F. Inger, Curator of Amphibians and Reptiles. Also present on Members' Night will be former Chief Curator Schmidt. After thirty-three years of expeditions and research for the Museum in all parts of the world, Dr. Schmidt, despite retirement, still occupies a laboratory at the Museum and fills a full-time working schedule in the pursuit of his specialty, herpetological research.

Austin L. Rand

School Extensions—

With due deference to the principals and teachers of the public, parochial, and private schools, it may still be asserted that the two teachers with the largest classes in Chicago are on the staff of the Museum—because their classes include all the half million or more pupils in all the classes of all the teachers in all the schools of the city. Unlike Mother Hubbard, both of them have so many children to take care of that they *do* know what to do—and they do it. These two busy people are Richard A. Martin, Curator of the Department of the N. W. Harris Public School Extension, and Miss Miriam Wood, Chief of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

Curator Martin came to his schoolmaster role by a roundabout route—he joined the Museum staff in 1934, serving first as a member of archaeological expeditions to Iraq, Iran, and other Near Eastern areas. In 1937 he was appointed Curator of Near Eastern Archaeology and in 1946 was transferred to his educational post as curator of his present department, the function of which is to circulate throughout the school year hundreds of traveling natural-history exhibits in all of Chicago's schools.

Richard A. Martin

(*Continued on page 8, column 1*)

MUSEUM MEMBERS' NIGHT
Friday, October 7

SAFARIS MOLD SCIENTISTS AND ENRICH OUR MUSEUMS

By AUSTIN L. RAND
CHIEF CURATOR OF ZOOLOGY

SAFARI is a magic word. It conjures up visions of camps in far places and lines of laden porters on the march. "Safari" put into a news release from the Museum about any sort of expedition, not just one to East Africa where the word originated, practically guarantees that the item will be used by the press and that the public will read it.

In telling about birds and bird men and about bird collections and museums, the safaris, or expeditions as we usually call them, are logical and fitting places to start. Most museum specimens have been collected by expeditions and, for many a museum man, expeditions have pleasant personal associations.

Many a great naturalist owes much to his early expeditions. They gave him material to think about and inspiration to use it, and they helped in shaping his ideas. The greatest naturalist, Charles Darwin, got the idea he later elaborated into his *Origin of Species* while on *The Voyage of the "Beagle."* This theory gave us our present-day concept of evolution, descent with modification, that has so strongly affected our philosophy of man and nature. Another naturalist-philosopher, Prince Peter Kropotkin, introduces his book on *Mutual Aid*—an idea that seems to be coming back into fashion—with the sentence, "Two aspects of faunal life impressed me during the journey which I made in my youth in eastern Siberia and northern Manchuria."

AN EXCITING START

A chance to go on an expedition has given many a young naturalist his start in his career. I got my start that way. It is a wonderful way to see the world, to go as a peripatetic naturalist, see the main cities of the world, and then to live in the country where the collecting is to be done, investigating it, drawing up descriptions of its terrain, climate, vegetation, and people for the introduction to the main report, which contains an account of the birds that you find there with notes on everything you can find out about them.

The very names of the places I've stopped call up a host of memories: names such as Ambohimarahavava, Ihosy, Sonsonata, Mira Mundo, Manokwari, Tafa, Tagbilaran on Bohol, Little Evie's Lake, Manyberries, Wildhorse, Jaydot, Hicoria, Whiskey Slew, Hardscrabble Mountain, Boot Island, not to mention ports of call on the way to places —Marseilles, Majunga, Amsterdam, Batavia, San Pedro, and Samarai. These are place-names to dream on. Some I will see again, most of them I won't. I'd like to live over the times and places again, but more likely there will be new and different ones in the future. Museum collecting days are wonderful days.

The Museum collector is not really happy until he has established his camp in the jungle or on the plains and is spending his mornings getting specimens, his afternoons preparing them. The natives can be a big help in securing birds. The variety that natives get into their methods of collecting birds makes the museum collector seem a plodder indeed. The latter depends on a shotgun and chooses his shot according to his bird: coarse shot for large ones and fine shot for small ones, so as not to injure the plumage. The native to whom firearms are fantastically expensive in his scale of living, if available at all, still uses the methods our ancestors did before they had fowling pieces. Then falconry, nets, snares, and bird lime were commonplace in Europe, and they still are commonplace among some tropical peoples.

On the two pages that follow, the many steps involved in the operation of a Museum expedition are illustrated in a comprehensive series of sketches.

MAN-PROPELLED DECOYS

One of the most intriguing ways of catching birds used by natives is the wading for ducks, a system I found in Madagascar where the natives brought me flamingoes, ducks, and gallinules they'd caught that way. But Dr. Salim Ali gives the best description I've seen of this craft as practiced in northern India. Coots that swarm on Manchhar Lake in Upper Sind are the chief game. The local Mohana poles his boat as near the flock as he thinks is safe. Then he dons a duckskin hat and slips into the water. He submerges until the duck hat, which has head and neck naturally posed, seems to be a duck swimming. The Mohana, thus camouflaged and watching through holes cut in the hat, slowly edges up to the flock of coots and seizes one after another by its feet, pulls it under, and ties it to his belt. Finally the coots become suspicious and patter off, but a good operator may have from ten to fifteen coots on his belt by then.

The habitats of a bird may make a special method of capture possible, as with the Argus pheasant. This magnificent pheasant clears a display ground for itself in the forest of Borneo, and this the Dyaks capitalize on. They take a piece of bamboo, that many-purpose plant of the tropics, and shave it thin to a razor-like edge. This they plant firmly in the ground in the Argus pheasant's display area. The male Argus pheasant, returning, tries to remove the sliver of bamboo. But it is firmly anchored. In trying to pull it out, the pheasant twists it and pushes against it and finally by accident rubs its neck along the razor edge and cuts its own throat.

No matter how the museum collector gets his birds, he turns them all into museum specimens. The oldest museum bird specimens are said to be a half dozen or so given to the museum in Upsala, Sweden, in 1747. They are thus something over two hundred years old. There are other older examples of prepared birds, notably the birds from tombs in Egypt, preserved as mummies. The oldest mounted bird that has come to my attention is an African gray parrot about 250 years old. It, too, was connected with a tomb, but in Westminster Abbey, and is the only parrot to gain that eminence in death. Sir Norman Kinnear tells the story.

This parrot belonged to Frances, Duchess of Richmond, who as Frances Stuart was known as "la belle Stuart." She was the mistress of Charles II, was described by Pepys in his diary, and in her will left money to found a home for stray cats, causing Alexander Pope to write, "Dying, endow a college for cats." She was fond of animals, and when she died, the parrot, which survived her by only a few days, was mounted in a life-like pose and placed along with a wax effigy of the lady in her Queen Anne coronation dress near the tomb in which Lady Frances rested with her husband in the Abbey.

Scientific collections of birds got a late start, probably because no way of preserving birds was known. The pioneer bird men, Turner of England and Gesner of Germany, in the mid-16th century, and the greatest ornithologists of the 17th century, Willughby and Ray, worked mostly from sketches and drawings and rarely were able to have a "dried" bird for study.

BEGAN WITH PLUMES

Though the 1500's and 1600's were periods of exploration, drawings rather than specimens were the bird material brought back. But out of these voyages may have come the germ of an idea. The Mollucan bird hunters of the East Indies brought bird-of-paradise plumes from New Guinea and traded them to the Western World. These New Guinea plumes had been prepared for the trade by the bird being skinned and a stick thrust through it. Such "skins" reached Europe by 1522 and may have suggested to European ornithologists the idea of skinning birds. But Belion in 1555, giving directions for preparing birds, still

(*Continued on page 11, column 3*)

MUSEUM MEMBERS' NIGHT
Friday, October 7

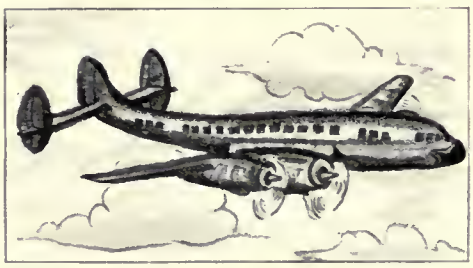
EXPEDITIONS

BY AUSTIN L. RAND, WITH

The bird specimens in museums are the guarantees of authenticity that stand back of the books written about birds. Chicago Natural History Museum's bird collection of some 240,000 specimens is one of the important bird collections in the world.

A series of expeditions is the best way of building up a collection. We may get some specimens through exchange, purchase, or

← Start of the expedition. In the offices of the Division of Birds the area to be visited is decided on, plans are made, and equipment is ordered and gathered. Expedition personnel is carefully selected. Preferably we send professional naturalists or men who have trained themselves for such a position. They must be practical enough to arrange for food and water, shelter, and transportation where such things are scarce; they must be hunters enough to collect the animals and preparators enough to make them into proper specimens and get them dry, packed, and safely shipped home; they must be biologists enough to know what are desirable specimens and what records and notes are of value; they must be diplomats enough to deal with foreign officials and native potentates, often in foreign languages; and they must be managers enough to handle museum funds and direct expedition workers. Only key men are sent on expeditions. Local persons are recruited on the spot, as carriers, camp help, and hunters. They know the country and its problems. Their rate of pay is low, and they don't need transportation. They form a link between the expedition and the country.



Travel to the field of operation may be by:

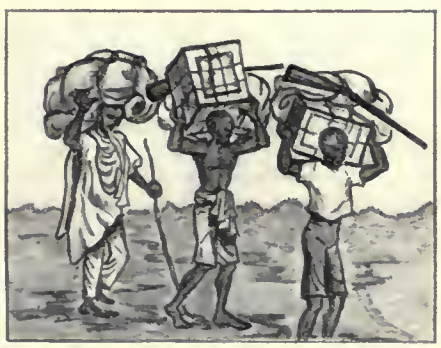
ship

airplane

train

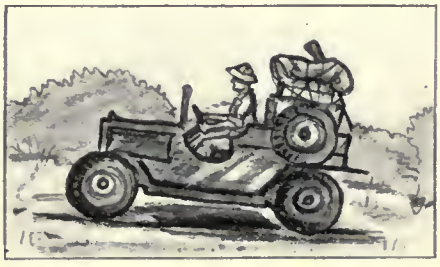
The jungle is the laboratory where the birds are sought and observations made in the humid tropics.

To prepare a speci
along breast and al



Once on location, in the field as we call it, travel may be more primitive: by carriers—by pack train—by canoe—or even by jeep.

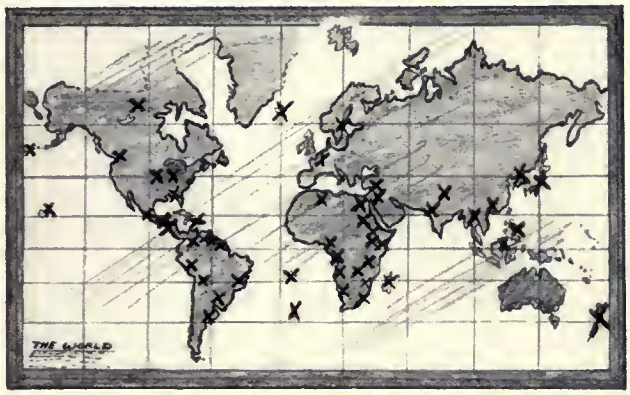
A collector's camp in the field. The wise museum man carries a tab
for he can work better in comfort; the native helper is working o
on a box.



O GET BIRDS

AWINGS BY RUTH ANDRIS

even gift, but nothing takes the place of an expedition with trained museum personnel. Not only does it bring back a good representation of the bird life but also a knowledge of the country and the local conditions affecting bird habits and habitats. This aids greatly in understanding the problems that arise later in writing about the birds.



Our interests span the world. The X's mark areas from which Chicago Natural History Museum bird division has received bird specimens in the last seven years.

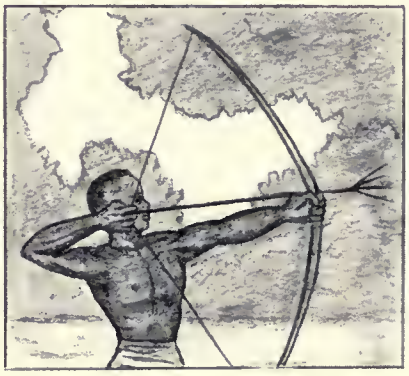
The collector shoots most of his specimens, using small shot so as not to damage the plumage.

by setting snares

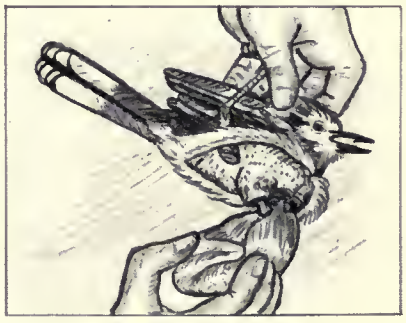
But native help is invaluable for getting many small, rare or shy birds:

by shooting with a many-pointed arrow

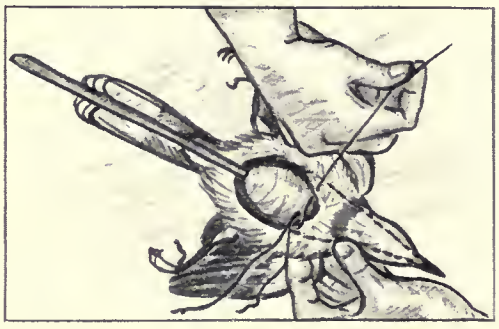
and by rigging bird nets



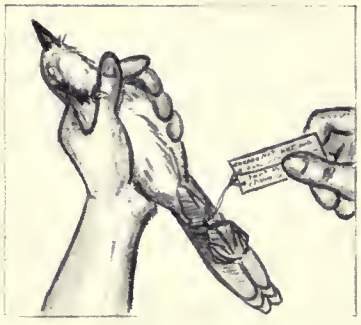
the skin is opened
en.



The body is removed. Skull, wings, and leg bones are cleaned and preservative applied.



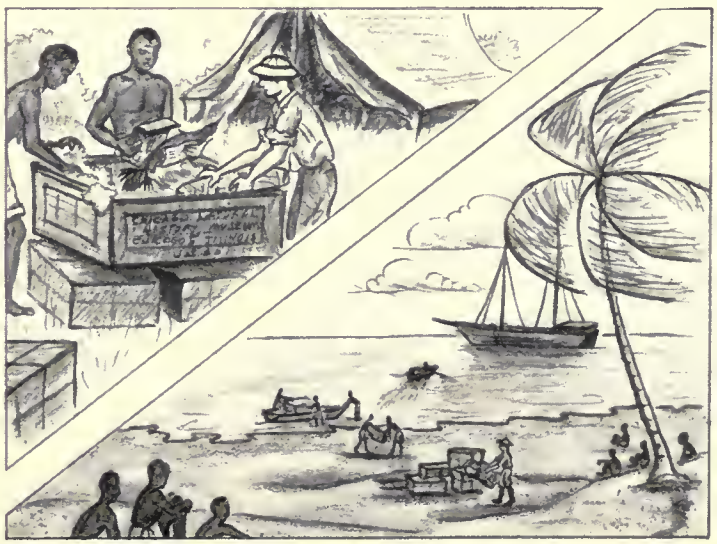
An artificial body of tow, cotton, or other material is inserted.



The finished specimen looks like a bird, lying on its back, with legs crossed and labeled with date and place of capture.

chair,
ornhill

The collector finishing a parrot specimen. His tools are few: scissors, scalpel, and forceps. Note catalogue and labels at hand.



The dry specimens are packed into a wooden box for shipment and, on the coast, may be taken out to a waiting schooner by dinghy to start the first leg of the journey back to the Museum.

YOUR HOSTS—

(*Continued from page 4*)

The Raymond Foundation, with a staff of Miss Wood and six other young women, carries natural-science lessons via other media to the same vast audience of school children. They present in the schools extension lectures with films and slides and are also in charge of the free motion-picture programs and other educational entertainments given in the Museum Theatre each spring, summer, and fall. They conduct also the guide-lecture tours of the Museum for both children and adults, and write the children's stories published by the Museum.

Miriam Wood

Miss Wood has directed the course of the Raymond Foundation's activities with such enthusiasm and such success that the Foundation's work has become a model for similar work conducted by institutions in many other cities. Her counsel has been eagerly sought on matters of education in natural history by teachers and principals of the schools in this city and by organizations such as Boy Scouts, Girl Scouts, camp directors, and others concerned in the guidance of youth. Her first concern always is the children themselves—to devise the best ways to heighten their interest in the natural sciences and to develop their powers of observation of the life of the plants and animals they discover wherever they may go. She has found in this work an inspiration—and her methods, her devotion, and her energy in turn have inspired the members of her staff, hundreds of teachers, and thousands of children.

Miss Wood and the other Raymond Foundation lecturers will conduct the escorted tours of the Museum for guests on Members' Night.

The Library—

No scientific institution or its staff could get very far without a good library for reference. With some 135,000 volumes on its shelves, the Museum's Library is the largest in its specialized fields west of the Alleghenies. The Librarian presiding over it is Mrs. Meta P. Howell whose seemingly limitless energies are devoted to making the Library's service as nearly perfect as may be attainable. And here it may well be noted that no matter how fine and complete a collection of books may be, its value would be largely lost to those who need it for research if it lacked administration by a capable librarian. Mrs. Howell has a sixth sense that anticipates the needs of the scientific staff, so that reference works required are practically always on hand and immediately available when requested. Under her supervision the Library has also augmented its service to the public in general. Mrs. Howell and her staff will welcome visitors in the Library on Members' Night.

Meta P. Howell

CHILDREN'S FREE MOVIES BEGIN OCTOBER 1

Beginning October 1 the Museum's James Simpson Theatre will be well occupied Saturday mornings with hundreds of youngsters attending the autumn series of free motion-pictures for children. Presented at 10:30 A.M. each Saturday during October and November by the James Nelson and Anna Louise Raymond Foundation, the programs offer a wide variety of entertaining and educational films.

Children are invited to attend the programs alone, accompanied by parents or other adults, or in groups from schools, clubs, or other centers. No tickets are needed. Following are the titles and dates:

October 1—Neptune's Children
An exploration of the wonderful world of sea and skirting shore
Story by Robert C. Hermes

October 8—Pueblo Boy
Story of a Pueblo Indian boy
Also a cartoon

October 15—Nature's Half Acre
A Disney "True-Life Adventure" color movie
Also a cartoon

October 22—American Cowboy
The story of real cowboys and life on their ranch
Also a cartoon

October 29—A Tale of Two Grizzlies
Story by Cleveland P. Grant

November 5—Some Favorite Animals
Also a cartoon

November 12—Ti-Jean Goes Lumbering
And other lumbering stories
Also a cartoon

November 19—Winter Hobbies
Also a cartoon

November 26—Wind from the West
Lapland story
Also a cartoon

MUSEUM MEMBERS' NIGHT
Friday, October 7

MEMBERS' NIGHT—

(*Continued from page 2*)

who do not wish to drive their cars, special free motor-bus service has been arranged. A special bus marked to indicate Museum shuttle-service will leave Jackson Boulevard at State Street at 15-minute intervals beginning at 6:30 P.M. The last bus will leave the Museum at 10:45 P.M. In both directions the bus will make an intermediate stop at 7th Street and Michigan Avenue. This transportation is free—no fares collected, no transfers required.

Meet the Creative Artists—

The dioramas in the Hall of the Earth are the work of George Marchand, well-known sculptor of West Seneca, New York. Mr. Marchand in 1951 prepared for Frederick J. V. Skiff Hall (Hall 37) ten dioramas representing prehistoric invertebrate life and is noted for his exhibition work in many other museums. The four dioramas now being prepared are his first venture into the creation of exhibits in the field of physical geology and the first use of his own patented system of automatic lighting that simulates the changes in light during a day. The other exhibits in the hall were prepared, under the supervision of Chief Curator Roy, by Harry E. Changnon, Curator of Exhibits in Geology, Preparators Henry Horback and Henry U. Taylor, and Miss Maidi Wiebe, Artist in the Department of Geology.

The three new dioramas of prehistoric American Indians are the work of Alfred Lee Rowell, Dioramist in the Department of Anthropology, with the supervision and counsel of Chief Curator Martin and George I. Quimby, Curator of North American Archaeology and Ethnology.

The exhibit illustrating the iridescence of hummingbirds was prepared by Carl W. Cotton, Taxidermist in the Department of Zoology. The Museum's Division of Engineering co-operated in devising the mechanical features of the exhibit.

SOUTHWEST DIORAMAS—

(*Continued from page 3*)

with pink clay are clowns who entertain the audience between dances and watch closely to assist the dancers during the ceremony. The only music for the dancing comes from the shaking of the rattles and the chanting of the dancers. The ceremony is patterned after one performed at Zuni today, but similar ceremonies are performed in the other pueblos in the Southwest, and this one probably has been in use for a long time.

An innovation in the display of these dioramas is their arrangement in a hexagonal pylon in the center of Hall 7. Each diorama can be viewed from two windows in the hexagon.

In other cases in Hall 7 are actual specimens of pottery, cradles, clothing, and tools.

SATURDAY AFTERNOON LECTURES TO BEGIN OCTOBER 1

WHERE would you like to go? A wide variety of travel adventure, ranging from the Bahamas to the Yukon, to India, and to South America, is offered for those who wish to see far places without leaving Chicago.

Opening on October 1, Chicago Natural History Museum will present its 104th series of free illustrated lectures provided by the Edward E. Ayer Lecture Foundation Fund. Well-known explorers with color motion-pictures of their exploits will appear each Saturday afternoon throughout October and November in the James Simpson Theatre of the Museum. All of the programs are free, and all will begin at 2:30 P.M.

Although limited accommodations make it necessary to restrict admittance to adults, children will have their own series of free motion-picture programs, provided by the Raymond Foundation, on the mornings of the same Saturdays.

The programs for adults are as follows:

October 1—Between the Tides

Robert C. Hermes

On color film Robert Hermes has captured the majesty and mystery of the sea in his story of the weird forms of life that inhabit its depths and its shores. To make his pictures he traveled to such widely separated places as the Bahamas, Nova Scotia, the Pacific Coast, and Hawaii. He has gone beneath the waves in tidepools with special submarine-camera apparatus to photograph the mysteries of the teeming life beneath the surface. His films abound in fascinating views of flying sea-birds and wading shore-birds on their patrols at the water's edge, and of patterns of sunlight and wind on water and rocks.

October 8—The Land the Glaciers Forgot

Howard L. Orians

One of the most curious phenomena of the Middle West is a huge area that was completely bypassed by the great glaciers. The contrasts between this driftless section and the glaciated areas are recorded in these noteworthy geological films. Orians also shows the wildlife of this unique region—its bears, otters, and many more commonly encountered animals. Especially interesting are his studies of birds.

October 15—Shikar in India

John Moyer

"Shikar" is an Indian word equivalent to "safari" in Africa. During several years in India on a mission for the United States government, John Moyer, who is head of the Museum's Division of Motion Pictures, made some truly sensational films of that vast country's animal life. The audience will thrill at tigers and elephants that threaten to come right out of the screen and walk down the aisles of the theatre, so close did they approach Moyer's camera lenses. There are adventures with rhinos and water buffalo, probably the most dangerous of all big game. Especially exciting is a roundup of thousands of wild elephants from the jungle into a stockade where those suitable for training as work animals are selected.

October 22—Strange People, Strange Places

Irving Johnson

This film and the narrative of Commander Irving Johnson, U.S.N.R. form an epic of adventure—the story of the voyage of the *Yankee*, one of the last of the square-rigged sailing ships, manned by a crew of young men and women without previous experience afloat. These young people sail to remote seldom-visited places, often through uncharted waters, and mingle with some of the world's least-known peoples. In New Guinea they dwell with tribes still living in a Stone Age culture, after taking their ship 300 miles up an uncharted river where floating islands from which they can pick coconuts lodge against the ship's bow and travel with the ship. Borneo, Siam, Bali, and various parts of Africa are logged in their itinerary.

October 29—Northwest by West

Cleveland P. Grant

A former member of this Museum's staff, Cleveland Grant is recognized as one of America's leading nature cinematographers. In his present film he will take his audience from Montana through British Columbia, the Yukon, and Alaska. He relates the story of the Old West, the Gold Rush areas, and the pioneers. Grizzly bears, Alaska moose, and a variety of birds are seen through his camera's-eye. Spectacular is a mating-time battle of bull bison, each weighing more than a ton. Grant also shows such garden spots as the orchards of Okanagan Valley in British Columbia, which he calls "the nearest place to Shangri-la we have ever found."

November 5—Brazil

Karl Robinson

Brazil, largest country of South America (vaster than the United States in territorial extent), is a land of startling contrasts ranging from barely explored Amazon jungles to modern and beautiful cities such as Rio de Janeiro and São Paulo. All of this great country's aspects are brilliantly represented in this remarkable color-film survey. Robinson brings out the importance of the coffee and rubber plantations to the nation's economy. Interesting, too, are his sequences of the life of the rugged vaqueiros (ranchers) and their herds in the semi-desert northwest, the jaugadeiros (raft-fishermen) of the coast, and the remnants in some areas of a culture brought from Africa. He even takes his audience underground into the world's deepest operating gold mine and into the precious-stone mines of Minas Gerais.

November 12—From Dodos to Devil Rays (in the remote islands of the Indian Ocean)

Quentin Keynes

A great grandson of Charles Darwin, Quentin Keynes made an expedition of his own in the wake of the famous "Voyage of the 'Beagle' " and the results are recorded in color films that concentrate on the unexpected in out-of-the-way places. Keynes started out on a search for a dodo and, although he did not find a live specimen of the long-extinct creature, he did find a skeleton in the island of Mauritius. He sought adventure also in the little-known islands of Rodriguez, Réunion, Glorioso, Aldabra, and the Seychelles. His motion pictures are packed with such thrills as the harpooning and capture of a giant devil ray and a 10,000-foot climb into the rugged and precipitous mountains and volcanoes of Réunion.

November 19—Indonesia Today

Lester F. Beck

The first complete all-color film made in Indonesia since the war is presented by Dr. Beck as an authentic record of one of the most fascinating areas in the Orient. Sumatra, Java, and Bali are all on the itinerary—their small villages and remote beauty spots as well as their wondrous and mystical cities. Fully as interesting as the

(*Continued on page 12, column 1*)

RESERVED SEATS FOR MEMBERS

No tickets are necessary for admission to these lectures. A section of the Theatre is allocated to Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

MUSEUM MEMBERS' NIGHT
Friday, October 7

WITH THANKS TO ALL WHO AID RESEARCH

By EARL E. SHERFF
RESEARCH ASSOCIATE IN SYSTEMATIC BOTANY

NUMEROUS accounts are to be found in museum bulletins of expeditions undertaken by staff members in the prosecution of their scientific researches. Interesting and instructive, these rightly receive prominent notice. Less numerous are citations of those persons or institutions to whom an author's thanks are due for important aid—aid so vital to the author's studies that without it many undertakings could never have been successfully completed. In looking back over several decades of research at Chicago Natural History Museum (or Field Museum of Natural History, as it was called when this research started), I was reminded of a number of such instances that seem worthy of mention, although doubtless they are but typical of the wonderful spirit of cooperation commonly found among scientific workers throughout the world.

In 1915 I was engaged in monographing the large genus *Bidens*, a genus of Compositae related to the well-known genera *Coreopsis* and *Dahlia*. First-hand information was needed about certain West Indies species that were distinguished by a climbing habit, and it was impossible to launch an expedition to the West Indies at that time. We therefore wrote to William Harris, superintendent of public gardens for the Department of Agriculture in Jamaica, telling him of our urgent need. He promised his whole-hearted assistance and embarked upon a small expedition of his own that required several days of arduous travel in the mountains and involved the use of several pack mules and much camp equipment.

VINE LOCATED

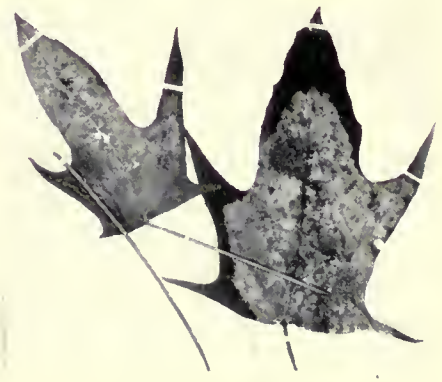
Finally, at Cedar Valley, St. Thomas (in western Jamaica), he located the very kind of vine that had been most desired and was able to send us pressed specimens and ripe seeds. Subsequently a seed was planted in Chicago and a large vine obtained that soon was multiplied by cuttings into many vines. Thereupon the authorities at the University of Chicago kindly allowed us to transfer the vines to the university's greenhouses and to keep them there under observation until all matters of leaf-outline, leaf-division, etc., could be settled. Mr. Harris died long ago, but his generous and unstinting co-operation made possible the settling of several moot points in a revisional treatment of *Bidens*, which the Museum published in 1937.

In this revisional treatment of *Bidens* it was proposed originally to illustrate all or most of the species with full-page plates. These were being prepared from borrowed herbarium specimens sent to Chicago from various institutions throughout the world. Around 1915, when World War I made ocean transport hazardous, most foreign institutions were compelled to discontinue shipping specimens across the ocean. And then what has always seemed to us a most unusual gesture of friendly co-operation came to us from Sir David Prain, Director of the Royal Botanic Gardens, Kew, England, and Dr. Otto Stapf, the famous botanist at the head of Kew Herbarium. These men directed that the sheets on which were mounted invaluable type specimens desired for our plates be carefully divided into two parts each, one part to be sent to the United States on loan for sketching and then kept on this side of the ocean until the end of the war. Meanwhile, of course, the other part would not leave the Kew Herbarium but would remain there to represent for all time the species of which it was the type.

And so, with the aid of these fractional sheets, supplemented by my own collection of large photographs taken at Kew before the outbreak of the war, it was possible to illustrate sixteen more species of the genus *Bidens*. Both Sir David and Dr. Stapf died many years ago, but some of the most important of the full-page plates that finally were published in 1937 are a testimonial to their exceptionally kind aid.

PECULIAR CASE

A strange case of a different sort of co-operation pertained to a new species of kukui, or candlenut, tree, a more detailed account of which may be found in the Botanical Series of this Museum (vol. 17, p. 558, 1939), under the title *Aleurites Remyi*. A French collector, Jules Remy, had collected somewhere in the Hawaiian Islands from 1851 to 1855 some flowering branchlets of kukui trees. These found their way into the huge herbarium of the Museum of Natural History at Paris and about 1938 were included in that museum's shipment of material sent by Dr. H. Humbert, the museum's director, to Chicago for study.



AID TO RESEARCH

Leaves from the type sheet of Aleurites Remyi, known by the common name Remy's kukui or candlenut tree. The type specimen is preserved in the Museum of Natural History in Paris.

Most of the specimens were found to represent the very common kukui tree of the Hawaiian Islands and other tropical areas of the earth, known to science as *Aleurites moluccana* (a relative of the species extensively cultivated in Florida and elsewhere as a source of the tung oil of commerce). Several detached leaves, however, were definitely of a different species, as could be seen from their very slender, acute lobes (*see illustration*). Failing to find any such species described in botanical literature, we appealed in a letter to Dr. Otto Degener of Honolulu, a botanist who is widely regarded as the foremost living authority on Hawaiian plants, for any information that he might have. He replied that he had a dim recollection of a woman mentioning long ago a similar, apparently new kukui. Some months later, however, he succeeded in extricating the lady's identity from his memory. She was Mrs. Thomas Jaggar, wife of the famous volcanologist (since deceased) on the island of Hawaii. Dr. Degener promptly wrote her for more information.

Dr. Otto Degener

Mrs. Thomas Jaggar

Mrs. Jaggar, however, had to wait until she could recall certainly where she had seen an anomalous kukui tree growing. In September, 1940, she made two trips to places where she believed she had seen one. On each trip she was rewarded by finding a tree. Elsewhere I have presented fuller details touching this peculiar case (*American Journal of Botany*, vol. 31, p. 157, 1944), but it may suffice here to say that Mrs. Jaggar collected herbarium specimens and ripe fruits from one tree. These she sent to Dr. Degener, who sent them to Chicago. The fruits were planted and a vigorous seedling tree obtained in 1941. The tree has been well protected at the University of Chicago greenhouses and now is some 23 feet high. Unfortunately it has failed to flower or fruit.

Meanwhile other collectors were spurred on to search for this species, named *Aleurites Remyi* for its original collector, to assist in rounding out our knowledge of it. Miss Amy Greenwell, in March, 1949, discovered

MUSEUM MEMBERS' NIGHT
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at Puuanahulu, western Hawaii, several more trees of it, all of them young, and obtained herbarium specimens for distribution to various scientific institutions. Chicago Natural History Museum received two of these specimens through the kindness of Dr. Degener.

CLOSER TO HOME

In seeking to solve problems closer to home, we often have been agreeably surprised at the alacrity and extreme courtesy with which persons in some remote locality hasten to be of service to us or, through us, to science in general. An instance in mind concerns the rediscovery in 1912 of the now locally famous Kankakee mallow. An extended account of this rediscovery was presented in the magazine *Rhodora* for May, 1946 (vol. 48, p. 89). As stated there, it was desired in 1912 by the Department of Botany of this Museum to make fresh collections for botanical studies and descriptions of the Kankakee mallow, a plant known at that time only from an island in the Kankakee River. The elderly Rev. E. J. Hill, who had collected the species forty years before, consented, despite his age, 79, to accompany two of us from the Museum on a trip to the type locality, thus enabling us to collect a large supply of material.

Some four years afterward, the late Judge Arthur W. De Selm of the circuit court in Kankakee, learning that once again two representatives from the Museum were in Kankakee to collect specimens of the famous mallow, hastily adjourned his court for the day and placed himself at our service to aid us in every possible way. Judge De Selm's profession was, of course, law, but his interest in botany was such that he had gradually built up a considerable fund of plant lore. On his own initiative some years earlier he had gone to the island in the Kankakee River, obtained vigorous specimens of the Kankakee mallow, and planted them in his yard, where they were laden with delightfully fragrant rose-colored flowers when they were shown to us.

The rediscovery of the Kankakee mallow had an interesting aftermath in the discovery, by some botanists from the University of West Virginia a score of years later, of a related species of mallow on Peters Mountain at the Narrows, in southwestern Virginia. But shortly afterward, the forests on Peters Mountain were cut to the ground. This so altered the type-habitat of the new mallow that, in August, 1945, when we journeyed there to make an investigation, we were unable to locate the plants. We appealed for aid to the principal of the Narrows high school, Henry H. L. Smith, who enlisted a senior student, James Hubert Browning, to assist us. After a week of difficult mountain climbing, Browning finally located two of the rare plants and saved corroborative specimens for our Museum's herbarium. His assistance was especially fruitful in that it stimulated the interest of other local enthusiasts in the quest for what had seemed till then a possibly extinct species.

FRIENDLY AIDS

Thus our warm personal friend, Dr. P. D. Strausbaugh, professor of botany at the University of West Virginia, enlisted the friendly aid of Dr. E. Meade McNeill of Concord College, Athens, West Virginia. Professor McNeill and two companions very graciously undertook, even at the expenditure of much time and great physical effort, to rediscover the Peters Mountain mallow. By climbing to the topmost ridge and then walking along the ridge as a scouting team, one in the center at the very crest of the ridge and each companion spaced about twenty or thirty feet lower down and on opposite slopes, they resolved not to overlook a single mallow plant. Their thoroughness was repaid with finding numerous plants, some of them growing in clumps or even in small colonies.

As a result of the knowledge obtained or opened up to us by these generous collaborators, we were able, on a return visit to the Narrows in October, 1945, to climb directly to where living plants were growing and to make various critical and important observations. As an outgrowth of these observations, the Narrows or Peters Mountain mallow was christened with a new botanical name, *Iliamna Corei*, which distinguished it from the very different Kankakee mallow, known to science as *Iliamna remota*. *Iliamna Corei* was incorporated in the large new eighth edition of *Gray's Manual*.

The name *Corei* alluded to Dr. Earl L. Core, of the University of West Virginia, who was the original discoverer of the Peters Mountain plant. It seems unfortunate that, with the restrictions and limitations under which our systems of nomenclature operate, a commemorative collective name cannot be devised to honor the ofttimes numerous pioneers in the study of plant life who have played an important role, though perhaps merely as laymen, in introducing a plant to science.

In the foregoing remarks I have sought to show by a few random examples how deeply conscious the staff members of Chicago Natural History Museum have been down through the years of the invaluable assistance given them by a host of friends and correspondents and how much they have depended upon this assistance. It is upon such co-operative effort that much of the Museum's claim to a high place in the scientific world is securely founded. We can well afford to cultivate this co-operative effort most assiduously, knowing that upon it will depend, to a vast extent, the degree of success which our Museum attains as a great institution for the development of science and the advancement of knowledge of the world in which we live.

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MUSEUM SAFARIS—

(Continued from page 5)

recommends removing the entrails, packing the body with salt, and hanging it up by the legs to dry.

About two centuries later, in 1748, Reaumur, the celebrated French naturalist, published instructions on "Divers means for preserving from corruption dead birds . . . " outlining four methods: (a) skinning and stuffing, (b) putting in spirits of wine or very strong brandy, (c) embalming with powder, and (d) drying in an oven. There was still the problem of destruction of dried specimens by insects, but with the introduction about 1740 of the use of arsenic to keep bugs from eating the specimens, the way was opened for modern collections.

The late start that bird collections got is well illustrated by the British Museum, long one of the most important museums in the world, not only because of size and completeness of its bird collections but also because of its specimens of priceless historical value. Its bird collections started only about 200 years ago, in 1753, with the acquisition of Sir Hans Sloane's cabinet of 1,100 bird specimens.

MODERN METHOD

In the scientific world the standards of preparation of bird specimens have improved greatly. Now a museum bird specimen is prepared by skinning completely, turning the skin inside out like drawing off a glove, leaving the cleaned skull and wing and leg bones in the skin. The skin is coated with a preservative, preferably white arsenic to prevent insect damage, and turned right side out. It is filled with a spindle-shaped "body" of cotton or tow, with a slender stick or wire running from bill to tail. The bird is arranged with bill pointing ahead, wings folded, legs crossed, tail straight, and slightly spread. For all the world it looks like a dead bird, lying on its back, feathers smooth and clean. A last, and an all important point too often ignored by early collectors, is a label. The label is a must, and on it must be (a) locality and (b) date, at least. A specimen without a label loses much of its value.

These specimens, study skins they're called, can be completely prepared in the field on safari. They are compact and can be packed in boxes for shipment. Upon arrival at the Museum they're unpacked, sorted, and filed in our dust-proof cases readily available for study and comparison.

EXHIBIT OFFERS LESSON IN IVY SAFETY

"Oh, look at these beautiful leaves," said the young woman as she started gathering some to take a bit of autumn color home. Regrettably, the leaves turned out to be poison ivy and the young woman spent two weeks in misery with a case of ivy dermatitis. She—and thousands of others who suffer similarly during the "outdoor" season—could have avoided poison ivy and its relative, poison sumac, by taking ten minutes to learn how to recognize these plants.

To encourage and help *you* to do this, a special exhibit on poison ivy, poison sumac, and harmless plants often confused with these poisonous species has been set up in Stanley Field Hall. Studying the exhibit for only a short time perhaps can save you days of suffering later.

SATURDAY LECTURES—

(*Continued from page 9*)

places and the scenery are Dr. Beck's observations of the people who are remaking this country that so recently won its independence. But, as the film shows, the people are nevertheless preserving their cultural traditions—the temples, ceremonies, and ritualistic dances and the famed native jewelry-making, weaving of fine fabrics, and woodcarving.

November 26—Excavating the Tomb of a King (the Nimrud-Dagh exploration in Turkey)

Kermit Goell

This is the story in color film of the excavations at the mountain of Nimrud-Dagh in Turkey, part of the important empire ruled in ancient times by the Hittites. The summit contains the tomb of Antiochus I, king of Commagene, who reigned about 69 B.C. Kermit Goell is photographer for the expedition that is now working there, headed by his sister, Theresa Goell, an archaeologist. Colossal stone heads and figures have already been uncovered, and it is expected that the expedition will penetrate the tomb this coming winter. Goell's film records the activities of the expedition and, in addition, is an ethnological document of the lives of the present-day people who inhabit the mountain villages of the area.

Museum Highlights Tours

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

STAFF NOTES

After completing studies of type specimens of staphylinid beetles at various museums in Europe under a grant from the National Science Foundation, **Dr. Charles H. Seevers,** Research Associate in Insects, has returned to the Museum. He spent eight months abroad, working chiefly at the British Museum (Natural History), London, and the Natuurhistorisch Museum in Maastricht, The Netherlands . . . . **Miss Pearl Sonoda,** Assistant in Fishes, has returned from two months of research at the Hopkins Marine Station maintained at Pacific Grove, California, by Leland Stanford University . . . . **William D. Turnbull,** formerly Preparator in Paleontology, has been promoted to Assistant Curator of Fossil Mammals . . . . **Mrs. Ellen Miller** has been appointed to the staff of guide-lecturers in the Raymond Foundation. Mrs. Miller who prepared for her career at Brooklyn College, New York, and San Diego State Teachers College in California, was formerly employed at the University of Chicago.

NEW MEMBERS

(August 16 to September 14)

Associate Members

E. T. Kurzdorfer, Wrigley Offield, Erwin A. Salk, P. B. Schnering, Gerald A. Sivage

Non-Resident Associate Member

Albert C. Droste

Sustaining Members

Vincent R. Bliss, Meyer Dry

Annual Members

Anthony J. Aurelio, Dr. Julius N. Bell, Seymour Berman, Aldis J. Browne, Jr., Philip D. Caloger, Anthony R. Chiara, Morton A. Davis, Ira T. Dawson, Frank P. De Lay, A. F. Denemark, Frank De Vuono, Paul H. Durrie, Miss Marie W. Galle, H. Hunter Gehlbach, Hugo V. Genge, Francis P. Gornick, Ernest H. Hallmann, Harold L. Halvorson, Anders E. Hjerstedt, Glen W. Holderby, Robert J. Hoshell, Norbert S. Jacker, Walter O. Krebs, Stanley J. Krzeminski, Mrs. J. J. Lewis, James F. Niblick, B. P. Nilles, Thomas S. O'Connor, William F. O'Rourke, Jr., J. F. Pendexter, Henry L. Pitts, Dr. I. Robert Plotnick, Dr. Carl M. Pohl, R. W. Regensburger, W. Hunter Russell, E. H. Schuck, Charles Schulien, F. W. Specht, Charles L. Stewart, Jr., Oliver S. Turner, Floyd G. Van Etten, Mrs. R. D. Van Kirk, John S. Varley, D. R. Watson, Miss Laura M. Weber, Harrison S. Weeks, Samuel E. Zeitlin

MUSEUM MEMBERS' NIGHT
Friday, October 7

MUSEUM TV PROGRAMS ON CHANNEL 11

WTTW, Chicago's new educational television station that began test operations last month, will include in its schedule programs from Chicago Natural History Museum on scientific subjects. First of the Museum programs will go on the air at 9:30 P.M. on Friday, November 4, when Dr. Karl P. Schmidt, Curator Emeritus of Zoology, will present "The Truth About Snake Stories."

Illinois Audubon Lectures

A series of five screen-tours to be presented on Sunday afternoons at 2:30 P.M. in the James Simpson Theatre of the Museum is announced by the Illinois Audubon Society. The first, on October 9, will be "Hunting with a Microphone and Color Camera," offering for the first time magnetic sound on film to permit greater fidelity in the reproduction of the songs of birds. The films, in color, were made by Prof. Arthur A. Allen of Cornell University, who will appear as lecturer. In order to record the songs of the greatest possible variety of birds, Allen ranged the length and breadth of North America to make this film.

Seats in the reserved section of the Theatre are available to Members of the Museum and of the Audubon Society.

World Children's Day

In connection with World Children's Day, set for October 3 by the United Nations Educational, Scientific and Cultural Organization as a step in the campaign to overcome nationalistic and racial frictions, the Raymond Foundation of the Museum will have a special program for children on Saturday, October 1. Children at the Museum that day will be invited to participate in "Treasure Quests" in which they will seek out exhibits pertaining to the children of other lands. The program will tie in with the first of the season's free motion-picture presentations for children in the James Simpson Theatre.

GIFTS TO THE MUSEUM DURING PAST MONTH

Following is a list of principal gifts received during the past month.

Department of Anthropology:

From: Lester Bradford, Hebron, Me.—marimba, Sierra Leone, British West Africa

Department of Geology:

J. Desart, Chicago—uranium ore, carnotite, and other unknown U308 in sandstone, New Mexico; John Patrick, Idaho Springs, Colo.—topaz; Mrs. W. R. Smith, Fall Church, Va.—thaumasite, prehnite, and apophyllite

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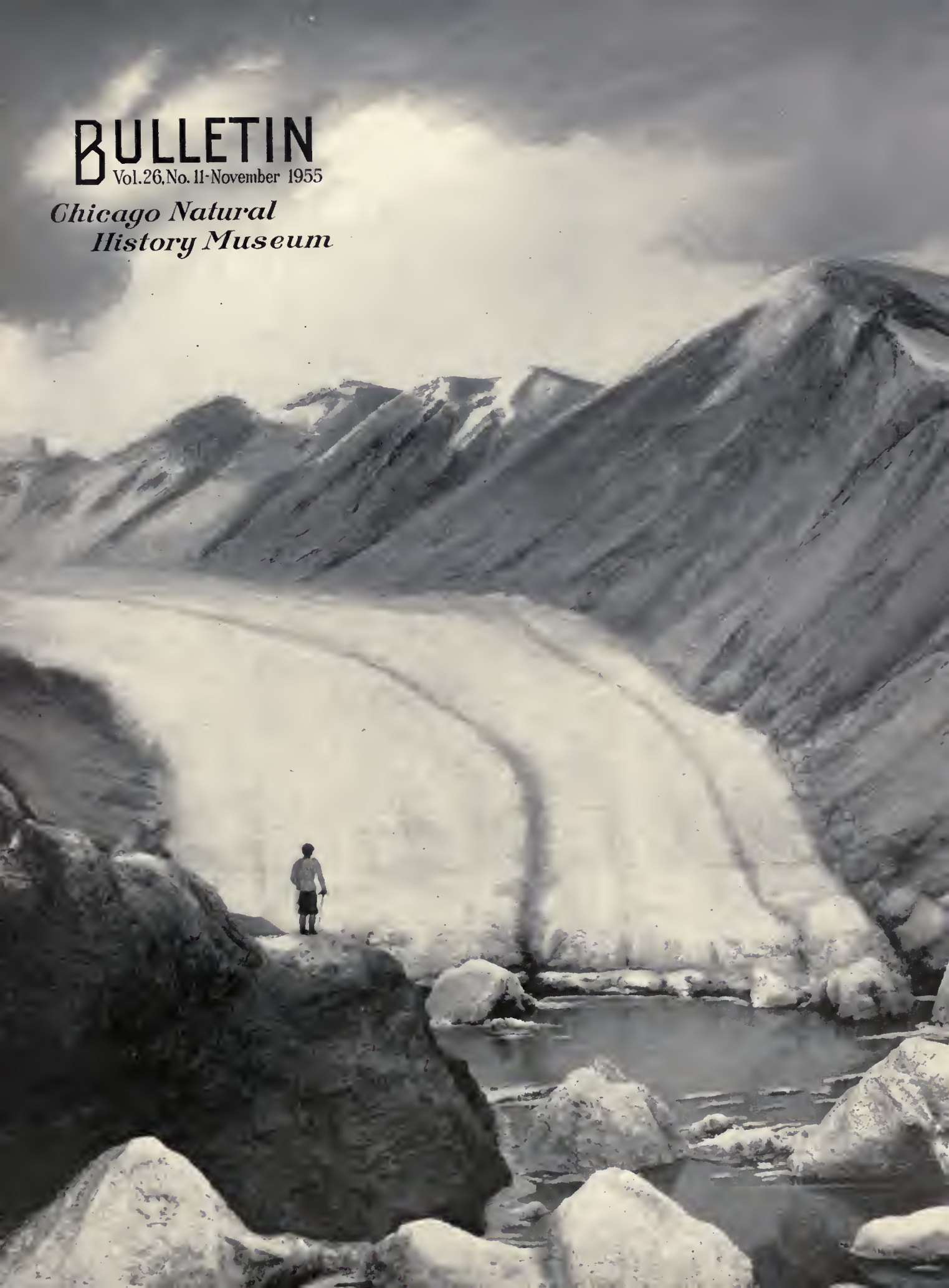

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Members are requested to inform the Museum promptly of changes of address.

MUSEUM MEMBERS' NIGHT STIMULATES FRIENDLINESS

The Museum's fifth annual Members' Night, held on the evening of October 7, enabled the staff to give a better understanding of the institution's activities, purposes and accomplishments to many of those who support it. The number of visitors, 1,093, was gratifying, and those who came manifested a profound interest in the ways in which the Museum functions.

Open house was held in the laboratories, shops, studios, and offices of the scientific staff and the various artists, taxidermists, technicians, and others who assist in exhibition preparation and in research. Demonstrations of methods and special techniques employed in Museum work were given. The Members showed great interest in the unique occupational specialties here that have few parallels in the workaday world except in other museums.

The Department of Geology furnished the theme of the evening—"the Earth upon which we live"—with a preview of its new Hall of Physical Geology (Hall 34) containing exhibits pertaining to the earth's origin, age, structure, and composition.

The evening closed with the gathering of most of the visitors in the James Simpson Theatre, where Dr. Sharat K. Roy, Chief Curator of Geology, gave an illustrated lecture on volcanoes.

MUSEUM 'TRAVELERS' ON ANIMAL STUDY JOURNEY

Learning about the animals that inhabit a museum's halls are, above, left to right, Randy Loftus, John Naples, Nick Montesana, and Richard Thomas, all of Chicago. The boys are participating in the Raymond Foundation's Museum Travelers Journey No. 3: "Animals Around the World," a project open to boys and girls who are interested in becoming "official" Museum Travelers. The diligent quartet above will have completed their journeys when they have answered all the questions found on the questionnaires they are holding. When each boy has completed four successive journeys, he is eligible to receive an award.

THIS MONTH'S COVER

Our cover depicts a valley carved by a valley glacier on its way from the perpetual ice fields of the mountain tops to the sea. The photograph shows this phenomenon as it is represented in one of the four dioramas by Sculptor George Marchand recently installed in the Museum's new Hall of Physical Geology (Hall 34). Valley glaciers are found on every continent except Australia. They originate in the perpetual snow fields at high altitude where the weight of the great accumulations of ice and snow cause tongues of ice to flow through pre-existing stream valleys to lower altitudes. Commonly they reach the sea where great blocks of ice cleave off the front of the glacier and float away as icebergs.

Staff Notes

Dr. Karl P. Schmidt, Curator Emeritus of Zoology, **Dr. Theodor Just,** Chief Curator of Botany, and **Philip Hershkovitz,** Associate Curator of Mammals, represented the Museum at the meeting of the American Institute of Biological Sciences at Michigan State College in East Lansing . . . . **Robert K. Wyant,** Curator of Economic Geology, has begun a year's leave of absence to participate in a mineralogical project in the West . . . . **Dr. John B. Rinaldo,** Assistant Curator of Anthropology, participated in a seminar on "Nomadic-Sedentary Culture Patterns" under the auspices of the Society for American Archaeology in Washington, D.C. . . . . **Dr. Orlando Park,** Professor of Biology at Northwestern University, has been appointed a Research Associate in the Museum's Division of Insects. He is a renowned ecologist.

Conference of Midwest Museums

The Midwest Museums Conference of the American Association of Museums was held in Chicago October 19–22. Chicago Natural History Museum was one of the hosts. Colonel Clifford C. Gregg, Director, welcomed the delegates, representing 135 museums, to a breakfast meeting at this Museum on October 21. Many members of the Museum staff participated.

ADVENTURES ABOUND IN MUSEUM 'LABS'

By AUSTIN L. RAND
CHIEF CURATOR OF ZOOLOGY

ONE DAY an editor said to me, "Let's call this new Museum bird-story of yours 'Vicarious Adventures of a Bird Man.'" "Oh, no we won't!" I said. It was the "vicarious" part I objected to. Adventure is a misunderstood word. To many, the thrills of adventure are associated only with travels to the ends of the earth; some people get vicarious thrills reading escapist literature; a few find thrilling spots in their work—"adventures of everyday life."

"Adventure" of course, has several shades of meaning, for adventure is a subjective thing. Those adventures with the element of danger or risk are the ones expected of returning explorers. But they're the ones the wandering naturalist tries to avoid. However, try as he will, in spite of forethought and preparation and care, there will always be some. I've had them myself. Going down Mozambique Channel in a dhow during the Northwest Monsoon once, trying to dodge the squalls, we had the sails blown off. Another time I narrowly escaped losing all the expedition funds locked in my tin trunk when a pirogue overturned in a flood-swollen river near Maromandia in northwestern Madagascar. Once, atop a ridge above the Mambarano River in New Guinea, we had to turn out all hands to keep our tents from blowing away. Again, a giant forest tree came crashing across camp and only the roots, tearing loose as the tree swayed, woke the boys and enabled them to escape. When a storm destroyed the airplane that brought our supplies to the headwaters of the Fly River, we had to raft down the river, equipment, personnel, specimens and all, for five days. I've stumbled upon a grizzly she-bear, with cubs, in the waist-high brush on a Yukon hill and, as the hair rose on her back, I went rapidly away.

But adventures can also be stirring thrilling experiences, not needing the sharp spice of danger. Such adventures have come to me in the field in plenty. I collected a new genus of warbler in Madagascar, recognizing that it was new, and the thrill was repeated when Jean Delacour named it for me, *Randia*. I found the unknown nest and young of the aberrant relative of the cranes that are called *Mesetes*. I've built a hide (blind) by a magnificent bird-of-paradise display ground and watched at arm's length the bird's display. From the hills above Dumaguete I've looked south over the Sulu Sea and seen Siquijor shimmering in the brightness, apparently hanging in the sky. At night I've sat on the beach of Dipolog in Zamboanga and watched the moving light of flying-fish fishermen. I've heard wolves howl near my campfire in Mackenzie Mountains, and the babacoote wail in the mountain forests of Madagascar.

Adventures in a museum naturally follow a different pattern, but the thrill of discovery, of accomplishment, of wonder and enjoyment is there, too.

The arrival of a collection is always an event. I've had shipments from Japan, Korea, India, the Philippines, Borneo, Australia, Java, Turkey, Africa, Tristan da Cunha, and Central America at Chicago Natural History Museum. Each specimen as it comes from the shipping case may be new: like the new species of babbling thrush from Negros, the new subspecies of a little screech owl from the Philippines, a babbler from Nepal, or the new thrush from Angola. The specimens may represent new records for the country, as a pigmy rail for Liberia from the Beatty collection and a mangrove warbler for Negros from the Rabor Collection. Or, as still often happens, the specimens may be new to our collections and thus are another step toward the complete representation of birds of the world at which we aim.

On the two pages that follow, the story of what happens to a bird collection after arrival at at the Museum from the field is told graphically in a series of sketches by Artist Ruth Andris.

There's no telling when discoveries may be made. Some come when the birds are unpacked—as the unpacking of a leaf-lined bulbul's nest from Borneo recalled a snake-skin trimmed nest from Madagascar and led to an elaboration of the question of why birds use snake-skins in their nests. But discoveries are most likely to be made after the specimens are unpacked, named tentatively, arranged in trays, catalogued, filed in their steel cases, and are being studied.

When we unpacked one shipment from the Philippines, I arranged all the little green leaf-warblers under the name they had been known, *Phylloscopus olivascens*. But when I measured them and compared them with specimens already filed in our cases, I found that two species had always been confused under this one name.

RELATIONSHIPS CLARIFIED

The specimens of land birds in a shipment from Tristan da Cunha were all well-known species (and new to our collections) but when I studied their relationships by comparing them with other species, and with published accounts, I found that their ancestors all came from America, not some from Africa as had been thought. Examination of a fresh casualty from the zoo, a cassowary, led to an improvement in the understanding of cassowary moult, which does not resemble the moult of penguins in some particulars as has been thought. The handling of a spur-winged plover and having the horny covering of the spur come off in my hand led to a survey of wing armature in birds.

Ideas are where you find them, and these are the things that we turn into scientific papers, the end product of our research. Our writings range from one-page notes on such subjects as "Philippine Bird Names of Blasius," short papers such as "Altitudinal Variation in an African Grass Warbler" and "Immature Females with Adult Male Plumage," to modest monographs such as "Social Feeding Behavior in Birds" and more comprehensive accounts such as my forthcoming "Checklist of Philippine Birds."

Our accomplishments do not end there. We make our information available to the general public too. Emmet R. Blake, Curator of Birds, wrote *Birds of Mexico, A Guide for Field Identification* for the bird-loving public going to Mexico, and together we wrote *Birds the World Over*, an illustrated guide to this Museum's Hall of Habitat Groups of Birds (Hall 20). There are also our popular articles such as we write for our Museum BULLETIN and which, collected into book form as *Stray Feathers from a Bird Man's Desk* (Doubleday), go out to the reading public.

These are the products of our work. The specimens in our cases and the published accounts based on our observations and reading are the tangible results of our stewardship. These things give us our adventures, and final presentation to the public is their highlight.

PHOTO CONTEST DEADLINE SET

Amateur and professional photographers are readying their entries for the world's largest nature photography contest, results of which will be exhibited in Stanley Field Hall during the month of February.

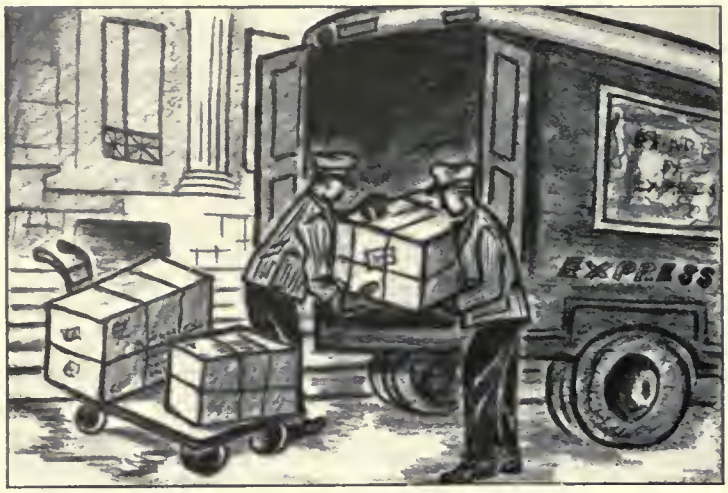
Sponsored by the Nature Camera Club of Chicago, the Chicago International Exhibition of Nature Photography, now in its eleventh consecutive year, will include prints and color slides of scenery, animals, plants, and other natural phenomena.

The deadline for entries is January 16, but early entries are encouraged so that both the contestants and the contest committee can benefit from additional time to classify and file the thousands of entries. The contest consists of two divisions—prints and color slides. In the print division, photographs may be either black and white or in color. In both divisions, to be eligible, entries must fall within one of three subclassifications: (1) Animal Life (2) Plant Life, or (3) General.

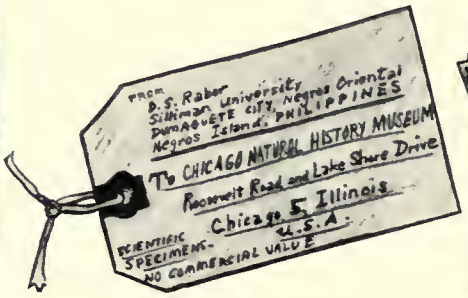
WHAT HAPPENS T

BY AUSTIN L. RAND, W

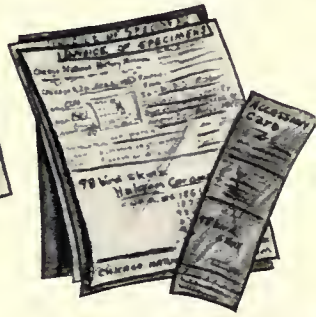
When a new collection arrives at Chicago Natural Histor Museum it is incorporated into the permanent referenc file of specimens, the Museum's "Bird Collection," and i



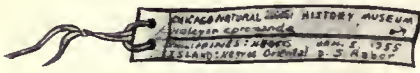
By plane or by ship and then by train the packing cases full of specimens arrive in Chicago, to be brought to the Museum by truck.



How the boxes are addressed.



An accession card is made for our records with the origin and general description of the collection and checked with the invoice.

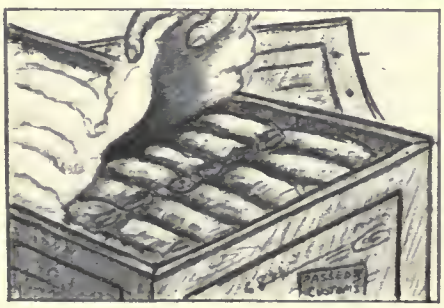


The individual label on each specimen must be in order, with place and date of capture and the collector's name, at least.

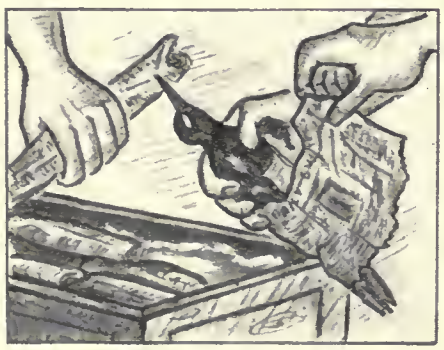
The cases are opened.

It is always an event when a new collection arrives and the whole staff of the Division of Birds gathers to help unpack it and sort the specimens into trays.

The collection is catalogued: each specimen is numbered and the data from the label is entered opposite the corresponding number in the catalogue, where now (1955) about 240,000 specimens are listed.



The specimens, wrapped in paper or cotton, lie side by side, row upon row, tier upon tier, tightly packed in the cases.



They are removed and unwrapped.

The newly arrived birds are finally identified and incorporated into the Museum bird collection. This is arranged in a natural systematic order, the most primitive birds first. The specimens are placed in rows in drawers in the dust-proof, light-proof steel cases of the bird range, available for easy reference. The collection is, in effect, a self-indexing file.

A BIRD COLLECTION

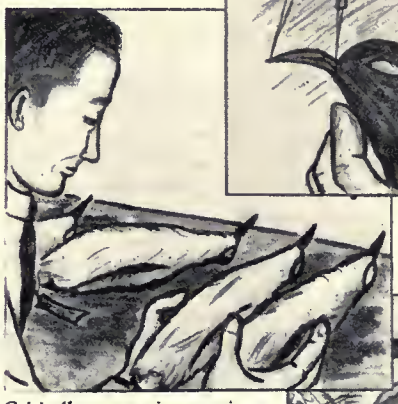
DRAWINGS BY RUTH ANDRIS

used in research on taxonomy, classification, relationships, moult, zoogeography, etc. Our collection is arranged in systematic order like a great card file and is self-indexing.

Measuring the bill.

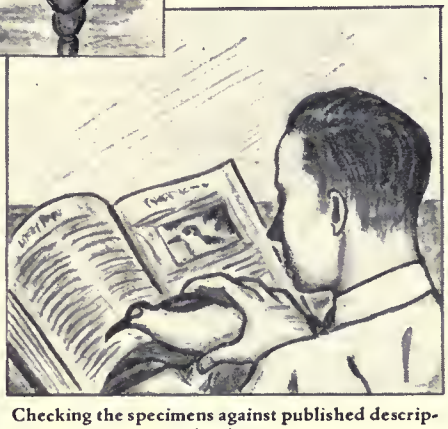
Measuring the length of the wing.

Research on the collection includes careful detailed examination of the specimens.

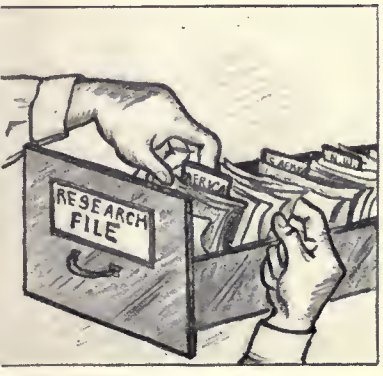


Critically comparing specimens.

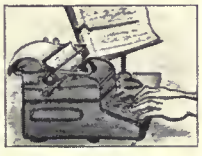
A report on the collection is written. The "tools" of the Museum bird man are pen and paper, ruler, dividers, files, maps, books, and bird specimens.



Checking the specimens against published descriptions and pictures in books.



Notes in our files are looked up.



The report is typed.

A continuing task is reading and indexing the current literature that floods into the library each week. Thus we keep track of progress in our field.

Manuscript ready for the printer.

New Fruit Pigeon from Nepal
Two New Birds from Philippines
Birds of British Guiana
Report on Birds from Guerrero
Birds from Liberia
Manual de las Aves de El Salvador
A Colombian Race of Tinamus
Catalogue of Birds of the Americas
Birds of the World
Stray Feathers from a Bird Man's Desk
Birds of Mexico

The finished product: a few of the 70 separate publications (as listed in the Museum's Annual Reports) written by the Museum's bird-division staff in the past six years.

"DP's" OF 14th CENTURY IN OUR SOUTHWEST

By PAUL S. MARTIN
CHIEF CURATOR, DEPARTMENT OF ANTHROPOLOGY

A NEW CHAPTER—perhaps the concluding one—in reconstructing the life of the prehistoric Mogollon Indians of western New Mexico was unfolded this past summer. It reveals the folkways of a people who built a village overlooking the Blue River Valley and then finally abandoned forever their homes and farms about A.D. 1350 and moved elsewhere. What catastrophic event caused this upheaval of a tribe whose ancestors had dwelt in the land for about 5,000 years?

The answer is not easy. However, some new information was obtained by the Museum's 1955 Archaeological Expedition to the Southwest to help in solving some of the problems we have been wrestling with for twelve seasons, and to give us new perspectives and dimensions. But first, a brief review of the history of the Mogollon Indians is in order.

PRINCIPAL SOUTHWEST EXCAVATION OF 1955

Comprehensive view of the Foote Canyon site unearthed by the Museum's Archaeological Expedition. This structure, containing dwelling rooms and a kiva or church-like chamber, is believed to have been in use about A.D. 1350. The worker in foreground where room is in process of excavation is David Collier.

FIVE THOUSAND YEARS AGO

About 5,000 years ago, a group of Indians emigrated from southern Arizona to the Pine Lawn Valley area (near the present-day town of Reserve, New Mexico). They had left their homeland because the lakes and rivers were drying up.

The new settlers slowly established themselves in their new environment and during the following centuries added refinments to their civilization. At first, these Mogollon Indians (so named by archaeologists—we do not know what they called themselves) may have lived in skin tents and depended for food largely on gathering seeds, nuts, berries, bulbs, and on hunting small game. Later (about 2000 B.C.), the idea of farming corn, beans, and squash was adopted. Still later, the ideas of making pottery and of building pit-houses were borrowed from more southern tribes. By the beginning of the second or third century before Christ, the nucleus of a civilization had come into being. One extraordinary feature of this fledgling culture was the presence of religious buildings. A large pit-house was set aside in each village for devotional use even in the earliest times. Through the ages, while many other cultural changes were taking place, the church building was always found in each village, and it gradually became more elaborate and larger.

At about A.D. 1000, another innovation was introduced, namely surface houses or compact village units containing five to twenty contiguous rooms with walls laid up of rock. This type of housing is vastly different from the earlier widely-scattered pit-houses.

The foregoing brings us chronologically down to about A.D. 1200 and to the digging season of 1955.

GOALS OF EXPEDITION

The goals of our excavations and researches in the Southwest have been manifold; but the important ones are to learn (1) why a particular culture or civilization develops; (2) why and how it changes; and (3) why it declines and dies. These problems all have a direct bearing on our daily lives because their answers may help us to prevent our own civilization from withering.

We now have a fair idea about the genesis of the Mogollon civilization and many of the changes that took place over five millenia; but why the Mogollon Indians rather suddenly abandoned the forested area of west central New Mexico is a mystery. The region contained many of the major elements attractive to farmers: arable land, streams, game, wild plants, and a bracing climate. Why did they uproot themselves from all this?

The favorite explanation had been that enemies (perhaps Apaches) had driven them out. It was assumed the latest sites would be fortified and that one would find evidence of carnage. But in 1954, we excavated several "late" sites that were probably abandoned about A.D. 1250, and none of these villages was fortified. They were built on an open plain or on low hills near rivers. No signs of walled enclosures, forts, or carnage were found.

THE LAST VILLAGE

In 1955, after diligent search with the help of friends, notably Dr. E. B. Danson of the faculty of the University of Arizona, we found what was perhaps the last village to have been occupied.

The village itself, known as the "Foote Canyon Site," is perched atop a low mesa, some 75 feet high, around which curves the Blue River. The ground floor rooms of the village apartment house, a section of which may have been two stories high, probably number 50. The rooms are arranged about the four sides of a quadrangle, inside of which was a roofed plaza and probably a church or *kiva*. Access was by means of a gate or portal in the plaza and perhaps by entrances leading directly into the outer tier of rooms.

We excavated 15 rooms, the plaza, and parts of the refuse dump. At the foot of the mesa we discovered a second large rectangular kiva with a ramp entrance. This ceremonial chamber probably served as a religious center for a few other nearby villages.

One of the most significant, although tiniest finds, was a copper bell that we picked up on the plaza floor. It is slightly crushed, possibly from being stepped on by one of the religious dancers. Bells were worn as bracelets and anklets in dances. This is the first piece of copper found in our Mogollon area and is important because it suggests there may have been trade with the people of Mexico or the Indians of southern Arizona.

One fact that impressed us was the evidence of restlessness displayed in the architecture. Rooms were added or altered in size; partitions were thrown up or torn

down. Dissatisfaction with the apartments was demonstrated time after time. We had noted the same trend in earlier buildings, but the changes seemed more abundant in the 1955 site.

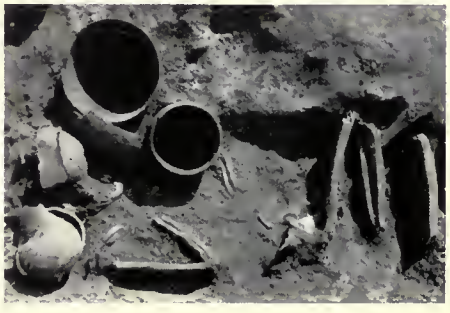
We sensed that a constant urge to change was a fundamental trait of Mogollon civilization. So, when times became hard, it was natural for these Indians to pull up stakes and move. They were not tied down to their homes and possessions which represented a very limited investment. Erection of a village probably took only a few months; pottery and tools of bone and stone could be turned out in a matter of days.

Then, *what* caused them to become "DP's." We know certainly that neither Apaches nor other enemies pushed them out. Our Indians moved because they wanted to. It is possible that drought made farming difficult. It may be that the priests decreed a move to offset bad luck or black magic. Or a wave of restlessness may have spread over the Southwest and our Indians may have responded to a general pattern. Maybe they were like our pioneers and frontiersmen who simply did not fit into a settled existence—were troubled with "itchy feet." They were voluntary displaced persons.

When they moved, they took their most valuable and portable possessions, leaving behind mostly the heavy corn mills of stone and the large storage pots. But most of the "juicy" items that archaeologists dream of finding were removed and we found rooms as bare as Mother Hubbard's cupboard.

CLUES TO DATE OF HEGIRA

The dating of the exodus is not yet finally settled and may not be for some time. But we *guess* that the abandonment took place between A.D. 1325 and 1400—probably nearer 1350. This guess is predicated on the presence of certain types of pottery that



CONTENTS OF MOGOLLON GRAVE

Human bones and accompanying ceremonial pottery dug from burial by Southwest Archaeological Expedition. Interment date estimated at A.D. 1350.

have been dated approximately elsewhere in the Southwest. We found some types that occur in the earlier houses at the present Indian village of Zuni—about 40 miles south of Gallup, New Mexico.

The presence of some Arizona and Zuni pottery types gave us not only a date but also a clue as to where these people went. We believe that they moved westward into Arizona (a quick look at the area provided the necessary evidence) and eventually northward towards Zuni land. We shall follow them next summer.

Our researches thus far, then, have contributed in a modest way to the history of civilization. We found a "cell" or a small colony of primitive people who in 5,000 years trudged along the arduous and dim path of self-improvement. We have watched this "cell" expand, change, become more efficient in satisfying human wants and needs, and finally move on in answer to an inexorable demand that causes all segments of human society to improve.

The expedition's work required a staff of able and stout assistants to carry on all of the unspectacular but necessary chores—cooking, digging, pushing the truck out of muddy ditches, washing and sorting pottery, cataloguing artifacts. Dr. John B. Rinaldo, Assistant Curator of Archaeology, was my executive aid. Our helpers and colleagues included Mrs. Martha Perry, Mr. and Mrs. Alan P. Olson, David Collier, Roland Strassburger, Robert Lamb, Walter and Marvin Hooser, and John Menges.

THE CAT THAT BECAME A PATRON OF SCIENCE

By EMMET R. BLAKE
CURATOR OF BIRDS

THE PREDILECTION of cats for canaries has given rise to a saying known to every child. Almost forgotten is the remarkable feat of one cat that discovered, collected, delivered to its master, and finally harassed to extinction a species of bird only twice glimpsed in life by human eyes. By its unique achievement this anonymous tabby made history of a sort, and in so doing surpassed the efforts of any man in a similar field.

Our drama began, and unfortunately ended, late in the last century. The locale was Stephen Island, a rocky, partly wooded islet between North and South Islands of New Zealand. Although hardly a quarter of a mile in area, Stephen Island was the home of a Dr. Lyall, R. N., keeper of its lighthouse. With Dr. Lyall lived a cat.

The stage is set. Enter pussy. One day while prowling the islet THE CAT (surely a beast destined to achieve distinction as a patron of science should be honored once by capitals) killed a small, wren-like bird and brought its body home, as cats sometimes do. We can surmise that Dr. Lyall was pleased by this show of esteem and no doubt rewarded the purring animal with an affectionate pat. And well he might. This bird, skinned and preserved as a scientific specimen, was sent to Lord Rothschild, the eminent British ornithologist, who found that it represented a species new to science. Named *Traversia lyalli* in honor of the cat's master, this specimen is now deposited in the reference collection of New York's American Museum of Natural History.

Meanwhile our cat was not idle, as recorded events of the period clearly show. No sluggard, it! Afield each day, the cat found and caught other birds like the first,

and Dr. Lyall preserved about a dozen individuals. How many others may have been destroyed by the cat will never be known. All too soon the chase became futile and no more mangled bodies were brought to the lighthouse keeper.

Sixty-odd years have elapsed with no further word of the Stephen Island wren in its homeland. All that we know or can ever know of this bird, must be learned from the dozen or so specimens that are preserved in museums. Of the bird's song, its food, and its habits—perhaps all known at least in part by the cat—we have no intimation.

New Contributor Elected

In recognition of notable gifts to the Museum, Robert Trier of Chicago was elected a Contributor at a recent meeting of the Board of Trustees. Contributors are a special membership class including all whose gifts in funds or materials for the collections range from $1,000 to $100,000 in value. Mr. Trier's contributions have been primarily ethnological material for addition to the Department of Anthropology.

Guatemalan Museum Director Here

Dr. Jorge A. Ibarra, Director of the Museo de Historia Natural, at Parque de "La Aurora" in Guatemala City, was a recent visitor at Chicago Natural History Museum. During his stay he inspected the exhibits, studied the manner of preservation of animal and plant specimens, and conferred with Museum personnel. He is the founder of the Natural History Museum in Guatemala City and in Quezaltenango.

FOUR SATURDAY LECTURES IN NOVEMBER

South America, islands of the Indian Ocean, Indonesia, and Turkey are still to be visited via the remaining four lectures with color films to be given in the autumn series on Saturdays during November in the James Simpson Theatre of the Museum. The lectures, to all of which admission is free, begin at 2:30 P.M. They are presented under the provisions of the Edward E. Ayer Lecture Foundation Fund.

Although limited accommodations make it necessary to restrict admittance to adults, children will have their own series of free motion-picture programs, provided by the Raymond Foundation, on the mornings of the same Saturdays.

The programs for adults are as follows:

November 5—Brazil
Karl Robinson

November 12—From Dodos to Devil Rays (in the remote islands of the Indian Ocean)
Quentin Keynes

November 19—Indonesia Today
Lester F. Beck

November 26—Excavating the Tomb of a King (the Nimrud-Dagh exploration in Turkey)
Kermit Goell

No tickets are necessary for admission to these lectures. A section of the Theatre is allocated to Members of the Museum, each of whom is entitled to two reserved seats. Requests for these seats should be made in advance by telephone (WAbash 2-9410) or in writing, and seats will be held in the Member's name until 2:25 o'clock on the lecture day.

EVERGLADES JUNGLE IN AUDUBON FILM

"A Touch of the Tropics" is the title of a screen-tour to be presented at Chicago Natural History Museum on Sunday afternoon, November 6, at 2:30, by the Illinois Audubon Society. William H. Wagoner, Jr., will be the lecturer. This is the second in the current series of lectures presented by the Audubon group, and will be given in the James Simpson Theatre of the Museum.

Mr. Wagoner's color films and narrative will take his audience into remote parts of southern Florida, completely away from the famous crowded winter resort areas. They will go deep into the Everglades, a watery subtropical world where jungle meets swamp, key and sunken reef, all unlike anything else in North America. It is the record of a long trip by canoe through shadowy aisles of moss-hung cypress trees, the home of eagles, ibises, egrets, ospreys, spoonbills. Alligators are seen lazing in the sun or sliding, with a splash and clatter, away from view. Of special interest are Mr. Wagoner's underwater motion pictures in which the colorful creatures of another world are brought face-to-face with the audience.

Admission is free and seats in the reserved section of the Theatre are available to Members of the Museum and Members of the Audubon Society.

GIFTS TO THE MUSEUM

Following is a list of principal gifts received during the past month:

Department of Botany:

From: Pfc. Harvey Beeler, Seattle, Wash. —2 Lycopodiums, Alaska; Dr. L. J. Gier, Liberty, Mo.—23 phanerogams; Institute of Plant Industry, Madhya Bharat, India —6 samples of agricultural legume seeds; George Moore, Glencoe, Mo.—*Anemone virginiana;* Reparticao Central dos Servicos de Agricultura, Luanda, Angola—41 legume seeds; Dr. W. F. Edmonson, Seattle—alga; Dr. Roberto Llamas, Mexico City—isotype of Tradescantia Llamasii Matuda; Dr. K. W. Lord, Auckland, New Zealand—2 algae

Department of Geology:

From: Museum of Comparative Zoology Cambridge, Mass.—cast of jaw, Florida

Department of Zoology:

Roger Boe, Broadview, Ill.—11 frogs, 6 inland shells; Beatrice Bond, Chicago—elephant beetle, Dutch Guinea; Lt. Col. K. F. Burns, Fort Sam Houston, Tex.—2 bats, Arkansas and Texas; Dr. H. Holub, Indonesia—birdskin, 2 king crabs; Dr. Robert F. Inger, Homewood, Ill.—3 frogs, 2 snakes; E. V. Komarek, Thomasville, Georgia—5 mammal skins, 10 skulls, Georgia and Florida; Dr. Charles H. Lowe, Jr., Tucson, Ariz.—5 lizards, 6 snakes, Mexico and Arizona; Museo de Historia Natural, Montevideo, Uruguay—3 fresh-water shells

NEW MEMBERS

(September 15 to October 14)

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Robert Trier

Non-Resident Life Member
Clarence P. Ehlers

Associate Members

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SATURDAY MOVIES FOR CHILDREN

Four more free programs of movies for children will be given at the Museum on Saturday mornings in November. They will be presented at 10:30 A.M. in the James Simpson Theatre under the auspices of the James Nelson and Anna Louise Raymond Foundation.

Children are invited to attend the programs alone, accompanied by parents or other adults, or in groups from schools, clubs, or other centers. No tickets are needed. Following are the titles and dates:

November 5—Some Favorite Animals
Also a cartoon

November 12—Ti-Jean Goes Lumbering
And other lumbering stories
Also a cartoon

November 19—Winter Hobbies
Also a cartoon

November 26—Wind from the West
Lapland story
Also a cartoon

Daily Guide Lectures

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

Although there are no tours on Sundays, the Museum is open from 9 A.M. to 5 P.M.

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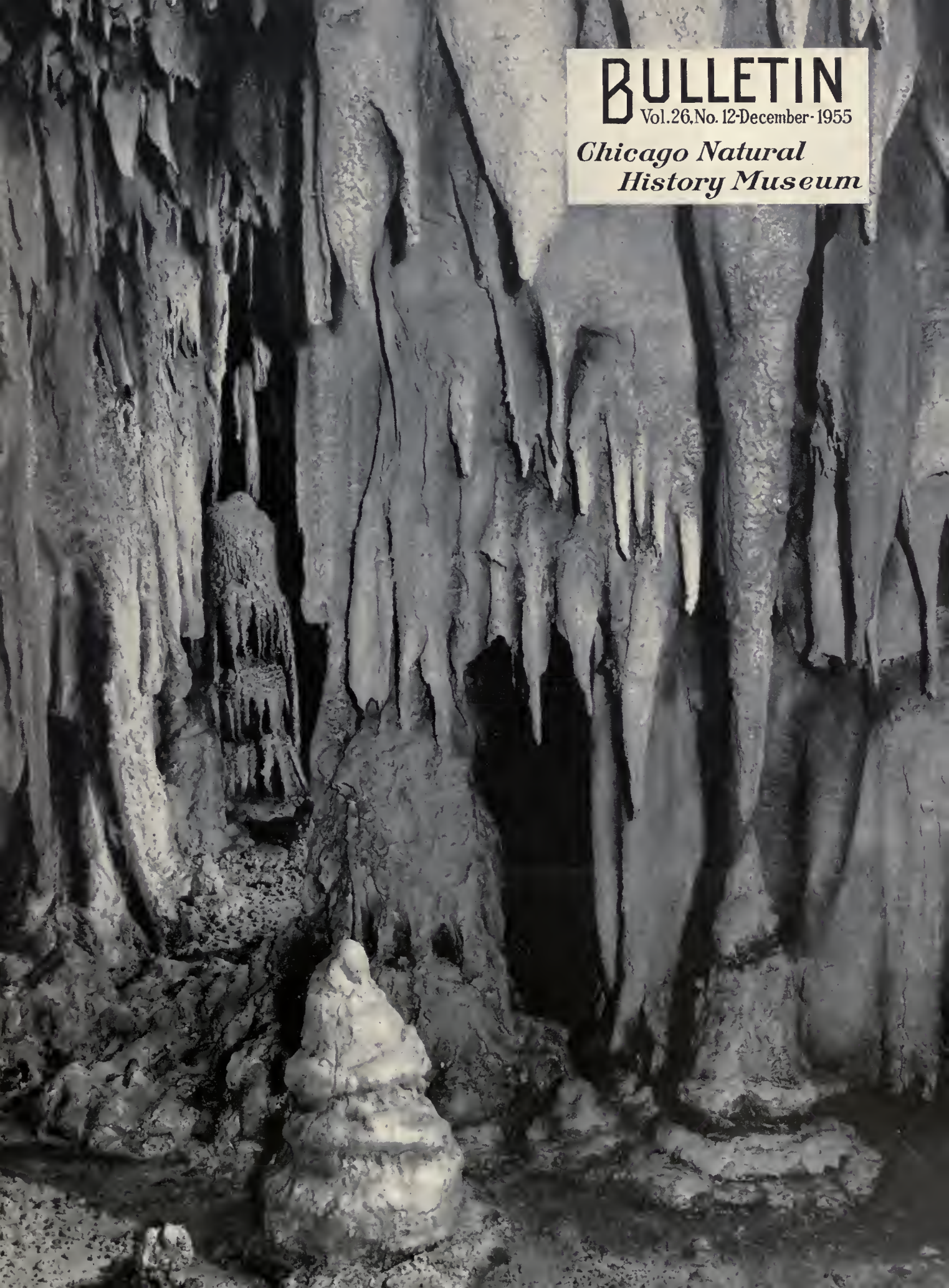

BULLETIN
Vol. 26, No. 12-December-1955
Chicago Natural History Museum

Chicago Natural History Museum

FOUNDED BY MARSHALL FIELD, 1893

Roosevelt Road and Lake Shore Drive, Chicago 5

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Members are requested to inform the Museum promptly of changes of address.

NEW ARCHAEOLOGICAL VISTAS OPENED IN CHICAGO AREA

By ELAINE BLUHM
ASSISTANT IN ARCHAEOLOGY

DURING the spring and summer months the Museum's Chicago Archaeological Project has been engaged in a survey of the Chicago region. The author and Philip Young, a student employe of the Department of Anthropology, spent many Saturdays and Sundays exploring fields and creek banks looking for sites of Indian encampments. Clues to the location of these sites come from people who have collections of arrowheads and other relics from the area, from old maps, and from promising locations found during the study of topographic maps.

While the work is by no means finished, much information has been obtained about the area closest to the city. At present we may divide the prehistoric occupation of the Chicago region into three periods: (1) an early period (about 3,000 to 4,000 years ago) when the area was occupied by small nomadic hunting peoples who lived in temporary camp sites and had tools of stone but made no pottery; (2) a Woodland period (about 1,000 to 2,000 years ago) when there were people living in small farming villages, making thick pottery and stone and bone tools; (3) the last period (about 1,000 to 300 years ago) when the Indians lived in larger villages, farmed and hunted in the surrounding area, made thin pottery and many kinds of stone and bone tools.

The archaeological survey has located a large number of early sites, several of the latest type, but very few of the middle period. This may mean that we are not looking in the right places, or it may mean that there were very few people in the area at that time.

The camp sites of the early hunters were of particular interest this season and were the only ones dug. In order to learn more about them, two were selected for further study, and several test trenches were excavated in each. We are very grateful to the owners of these sites who granted us permission to dig and to the students and Earth Science Club members who volunteered to do the work.

CHICAGO AREA ARTIFACTS

Ax, spearheads, knives and scrapers used by early Indian hunters who inhabited the region around what is now Chicago about 3,000 to 4,000 years ago. Recovered on "dig" sponsored by Museum.

Both camp sites were shallow—no more than eight inches deep, and all of the stone tools were found on or near the surface. While this was disappointing, for we had hoped for deeper sites which might yield more information, it is not surprising, for the sites were probably occupied for short periods of time by small groups, and in the last 60 years both fields have been plowed and the surfaces eroded.

Because there is no way of dating these sites exactly, we can only guess that they are as old as similar sites in other parts of the eastern United States which were occupied between 3,000 and 4,000 years ago. Artifacts from the sites consist of projectile points or spear heads 1½ to 2 inches long, often with small notches at the sides; small flakes of flint with worked edges; and larger pieces of flint crudely chipped to form scraping and cutting tools. Occasionally a site yields a stone ax or a milling stone for grinding seeds or nuts. Marine shells were found, on two sites, a fact that suggests trade between the Chicago area and the Gulf of Mexico at an early date.

More work must be done on these early sites for there is much to learn about the early inhabitants of the area. We hope that someday we may locate an early campsite with fire-pits and perhaps storage pits. In this way we shall find out more about the daily life of the Indians and perhaps obtain charcoal which can be dated by the Carbon-14 method.

THIS MONTH'S COVER

The scene, one of the new exhibits in Hall 34 (Physical Geology), prepared by George Marchand, sculptor and artist, represents one of the many chambers in Carlsbad Caverns, New Mexico, noted for its great size and for magnificent ornamentation. The interior is decorated with deposits of lime formed by a slow seepage of lime-charged water from numerous joints and crevices in the roofs and walls. These deposits have assumed fantastic forms and produced an underground scenery of weird and spectacular beauty. Caverns, the world over, have been the result, principally, of solution by ground water. They are generally developed in bedded limestone, which permits the water to continue its work of solution more readily than in rocks that are less soluble and that have fewer or no openings.

STAFF NOTES

Dr. Austin L. Rand, Chief Curator of Zoology, and **Emmet R. Blake,** Curator of Birds, attended the recent meeting in Boston of the American Ornithologists' Union. After the six-day meeting, Curator Blake went on to study research collections in museums of Cambridge, New York, Philadelphia, Washington, and Pittsburgh . . . . **Dr. Rainer Zangerl,** Curator of Fossil Reptiles, and **Dr. Eugene S. Richardson, Jr.,** Curator of Fossil Invertebrates, reported on the progress of the Museum's "Mecca (Indiana) Project" at the annual meeting of the Geological Society of America recently held in New Orleans . . . . **Dr. Paul S. Martin,** Chief Curator of Anthropology, was recently guest speaker for an evening class of Chicago's Central Y.M.C.A. in its series of "Visits with Interesting People." . . . . **Miss Elaine Bluhm,** Assistant in Archaeology, has been granted a four-month leave of absence from November 1 to accept a temporary post as research assistant on a Southwest archaeology project at the University of Illinois, Champaign.

Cut and uncut specimens of nearly every known precious and semiprecious stone are displayed in H. N. Higinbotham Hall of Gems and Jewels (Hall 31).

A BOOK IS GOOD, BUT MUSEUM SHOWS THE REAL THING!

By AUSTIN L. RAND
CHIEF CURATOR, DEPARTMENT OF ZOOLOGY

OUR ANIMAL EXHIBITS do not constitute a "dead circus," nor are they "cabinets of curiosities." Rather they attempt to portray the wealth of variety of animal life—to show the order and arrangement that pervades nature's profusion of organisms and to show how animals live, how they get along with or depend on each other and their environment, and how they are spread over the globe.

This is a tall order. In trying to meet it, we must remember that the possession of the real objects is the Museum's unique feature. Fascinating charts, diagrams, and models may be made, but to present the real objects is the Museum's main function. Our exhibits must be real, not fake. Ideas and theories can be found in books; schemes and models and diagrams can be found elsewhere. Only in a museum can one see the real thing. Not that color and design and models have no place in our exhibits, for they do. There is no reason why an arrangement cannot be pleasing as well as tell a story; why colors cannot be chosen for effect, and background design made attractive. Charts, models, and diagrams can emphasize and expand the story told by the real objects. Models must be used sometimes, but a single genuine feather, for instance, would add tremendously to the importance of the model of the dodo we display.

THREE TYPES OF EXHIBITS

However, one can get a surfeit of matchless treasures. Variety is needed, not only in presentation but also in approach. To meet this requirement we have three types of exhibits in the bird halls: the systematic series; the idea exhibits, each expressing a different biological principle; and the habitat groups.

The systematic series is the backbone of museum exhibition. It portrays the basic data: these are the kinds of things there are in the field. But there's no need to go off the deep end and try to present every single species and every single variant when a synoptic series will do. Our series of birds of the world (Hall 21, Boardman Conover Hall) is such a synoptic series. These exhibits are laid out at the family level. There are 300 species in the sparrow family, but we have chosen twelve as sufficient to show the range of structure and color pattern in the family. The drongo family, of 20 species, is represented by two species. Continuity in this series is the one of evolution. The families are arranged in a sequence with the nearest relatives together, from the most primitive to the most highly evolved, from penguin and ostrich to sparrows.

There are occasions when a complete representation of part of the field is advisable, as in our North American bird series. Enough people are interested in identifying our local birds to justify having what is in effect a study collection on exhibition.

AVOIDING MONOTONY

It is in the systematic series that monotony, the curse of museum exhibition, is most difficult to avoid. We've tried to relieve monotony by design and color and by the introduction of collateral material:

On the two pages that follow, the story of some of the more important steps involved in preparation of the Museum's exhibits is told graphically in a series of drawings by Staff illustrator E. John Pfiffner.

a tailor-bird's nest with the Old World warblers; a picture in the exhibit of weaverbirds of one tying a knot; a picture of oxpeckers on a cow with the starlings.

In addition, through the systematic series we have scattered exhibits with a different approach, the biological exhibits, as we call them. These go beyond simple relationships and portray other principles, such as the one illustrating the dependence of all living things on the earth for material and the sun for energy. Some organisms get these directly as do plants; others get them second-hand, as do mice that eat the plants; some at third-hand, as the owl that eats the mouse. The chain could be indefinitely extended through parasites and predators until bacteria turned the final predator back to the soil for plants to use again. Other such exhibits show reproduction, nests and eggs, growth, speciation, hybridization, and migration.

This variety is important, for the interest-span of humans is short. Only the serious student on duty will concentrate for long. Most of our visitors are on vacation or in holiday spirit. They are strolling through our halls to see new and different things, usually with no particular interest in a specific field. We cannot expect them to examine systematically all our material spread out for them. The comparison comes to mind of a special feast held one evening a week in the Manila Hotel when I was there last year. Great rows of delectables were put out. I couldn't do more than sample a small portion of the dishes each time. In our Museum we have spread an intellectual feast, and we strive to meet the challenge to make the items attractive and interesting enough that the casual visitor will find at least a few things here and there to stop and sample.

FASCINATION OF THE FAMILIAR

The great amount of new material spread before the first-time visitor to the Museum may make him feel like a stranger in a convention whose members, all labeled, he is meeting for the first time. Then to encounter in a Museum exhibit a robin such as nests in his own yard is as welcome as the sight of a face from his home town. One way we have capitalized on this human trait is to have an exhibit on bird-feeding stations, where familiar birds appear as actors in demonstrations of the methods people can use in putting out food, keeping water supplies from freezing in winter by electricity, planting for a garden, and providing nest boxes. It's one of the popular exhibits in the hall and an example of mixing the known with the unknown. Who knows; the person inveigled to stop at these familiar things may also look at the exotic pheasants displayed at one side and the exotic parrots at the other.

The habitat groups are an elaborate presentation of bits of countryside with their birds. They give the observer the impression that he is right there, looking into marsh, savanna, forest, or plain, with the birds going about their business undisturbed. Walking through our Hall of Bird Habitat Groups (Hall 20) is like embarking on a journey from continent to continent, visiting deserts, mountains, and coral atolls and looking at the birds there, all in the course of a half hour.

Dr. Karl P. Schmidt, Curator Emeritus of Zoology, has written in an earlier BULLETIN of the era of rethinking in museum exhibitions, of the change from accumulation of specimens to their more intelligent use, of the separation of the extensive study material and the selected exhibition material. He has also pointed out that this intelligent selection is hard work. But the ends justify it, as we hope visitors to our halls will agree.

Michigan Research Project

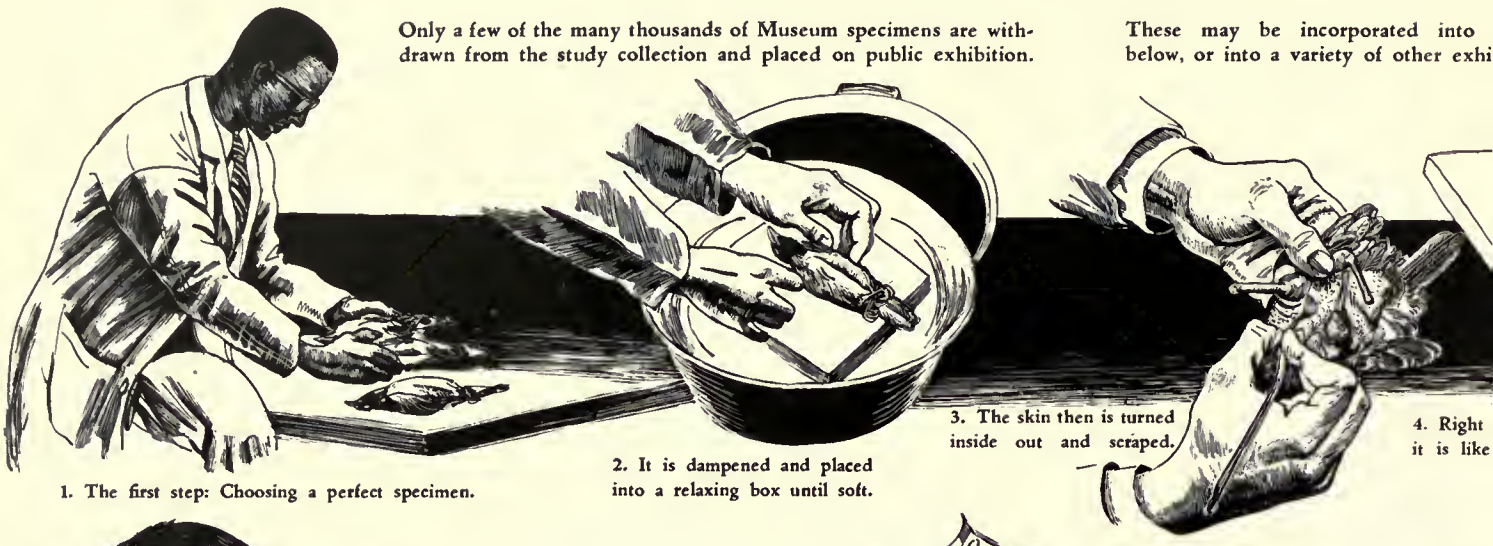
A project of digging and research of importance to three departments of the Museum was recently begun at Michillinda, Michigan, by George I. Quimby, Curator of North American Archaeology and Ethnology, and Dr. John W. Thieret, Curator of Economic Botany. The investigation centers upon a recently exposed bed of peat discovered by Harry W. Getz, of Moline, Illinois. Co-operating are two glacial geologists from the University of Michigan. It is anticipated that valuable information concerning fossil plant seeds, late glacial geology, and paleo-Indian environment will be forthcoming when the data are analyzed.

EXHIBITS: ONE OF THE MUSEUM'S P

BY AUSTIN L. RAND ILLUSTRATED BY E. JOHN PFIFFNER

Only a few of the many thousands of Museum specimens are withdrawn from the study collection and placed on public exhibition.

These may be incorporated into
below, or into a variety of other exhi

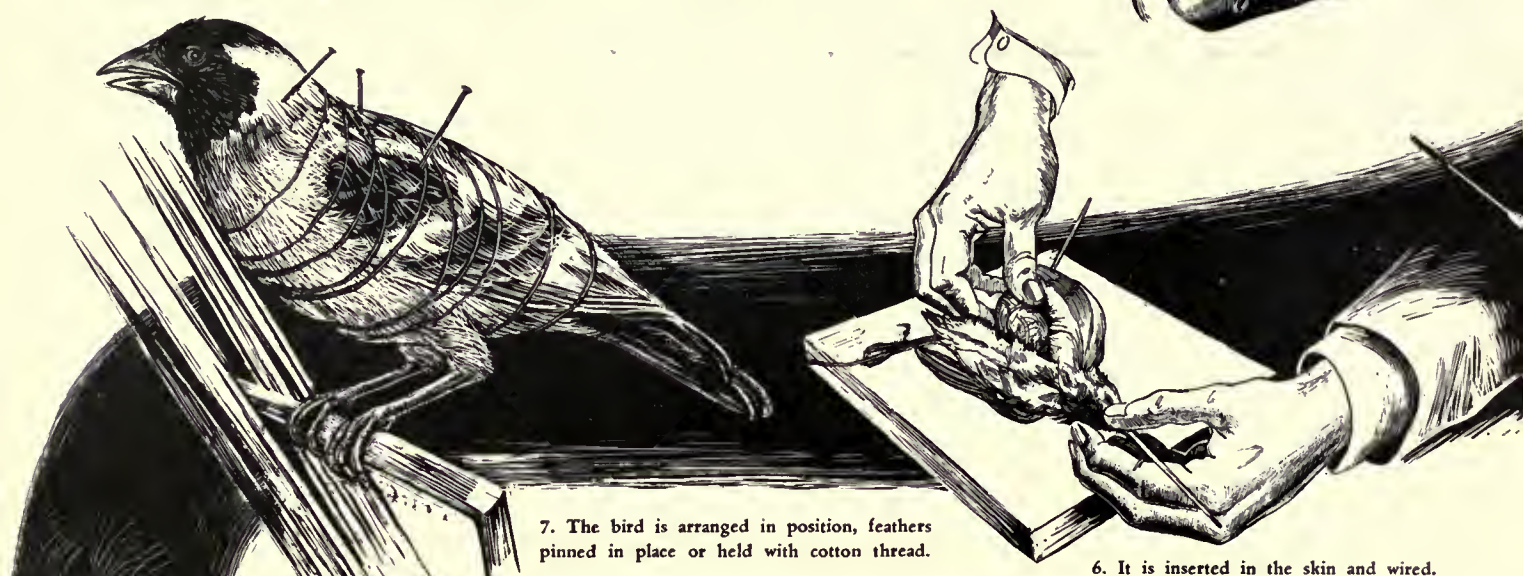


1. The first step: Choosing a perfect specimen.

2. It is dampened and placed into a relaxing box until soft.

3. The skin then is turned inside out and scraped.

4. Right
it is like



7. The bird is arranged in position, feathers pinned in place or held with cotton thread.

6. It is inserted in the skin and wired.

8. Finished birds ready for the exhibit.

9. A background is painted, using photographs as a guide.

10. Leaves of lilies are made of wax and cott

ODUCTS

groups as shown
trated at the right.

again
skin.

5. An artificial body of excelsior is made.

Natural sedge is wired in place and colored, and groundwork is made of earth mixed with shellac.

12. The finished habitat group—an African landscape in Chicago.

A. A transparent mirror turns a white winter ptarmigan to a brown summer one.

ENERGY FROM THE SUN

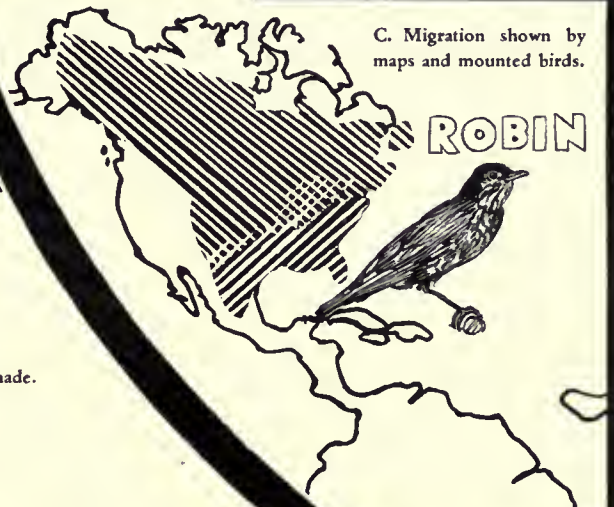
B. Links in the web of life
sun — grass — mouse — owl

GRASS

MOUSE

OWL

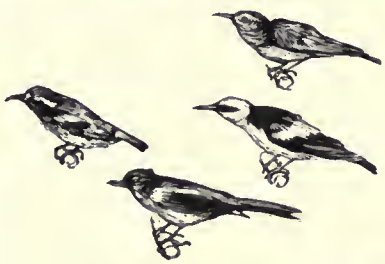
13. Specimens illustrate various things: the interdependence of living things and their environment; seasonal changes in color and in geographic ranges; and the variety and relationships of living things.



C. Migration shown by maps and mounted birds.

ROBIN

AMERICAN HONEY CREE



D. The variety and relationships within the bird world in a systematic series.

A Merry Christmas! . . .

AND HAVE A CUP OF HOLLY TEA

By JANE ROCKWELL

IF YOU ARE ONE of the millions whose home this Christmas will reflect the added cheer of one or more branches of holly, you and the other 1955 holly fans form only a small fraction of a vast procession of holly-gatherers whose number has been steadily increasing over the centuries.

When individuals first began coveting holly, the plant was considered a symbol of good luck or amity and thus extremely desirable to have around. Basically this attitude has changed little through the ages, except in restrictions resulting from various interpretations put upon the woody plant from time to time.

First to introduce holly into homes, it seems, were the pagans of early Europe, who did so to provide refuge for tiny and friendly fairies of the forest. Holly as a hearth decoration was quite well established before the advent of the Christian era, but the Christians were loath to accept holly decoration as a custom because holly was associated with the Roman festival of Saturnalia. Saturn, the god of seedtime and harvest, was feted at this time with, among other things, a generous amount of gross indulgence and revelry. Later when the date of the annual Christmas celebration was changed to late December, holly decoration was adopted by the Christians, and since then the plant has become an important part of the Christmas festivities.

UNLUCKY CONSEQUENCES

Legend, folklore, song—all have helped to shape the significance of the holly—and some superstitions about the plant persist even today. Several of these, contained in a list published in 1908 by W. Dallimore in *Holly, Yew and Box*, warn of unlucky consequences if the rules of holly decoration aren't properly observed. Holly was considered unlucky if it was taken into a household before Christmas Eve or if it wasn't removed before Candlemas Eve (February 2), when goblins were supposed to appear and frighten the maidens who had failed to perform this duty. Visitors were cautioned not to take holly into an invalid's room as the afflicted person would then be visited by disaster and possible death. Another legend stated that smooth- or rough-leaved holly entering the house would determine whether the wife or husband was to rule the household during the ensuing year. And still another belief based on a different seasonal viewpoint warned that holly decorations must be taken down on Shrove Tuesday, when the holly should be burned in the same fire on which pancakes had been fried! In India and Persia, where holly leaves take on great significance in religious observances, the face of a new-born child is sprinkled with water impregnated with holly bark.

There is no relationship between the words "holly" and "holy" as is sometimes suspected. Their etymological sources are quite different, and their relationship, therefore, can be described only as sentimental, not semantical. Holly is the modern form of the old English word "hollen," which was variously spelled "hollin," "holegn," "holie," and "holee." Surnames such as Hulm, Holmes, and Hulme, come from the same root-sources as holly, as do such American and British place-names as Holmestead, Holmville, Holmestone, Hollywood, and Mount Holly. European countries have their own names for holly: *acebo* in Spain, *le houx* in France, *schubbig hardkelk* in the Netherlands, *agrifolio* in Italy, *Christdorn* or *hultz* in Germany, and *stikpalme* in Denmark.

Approximately three hundred species of holly have been described and are included in the genus *Ilex* of the family Aquifoliaceae, and new ones are still being found. Of the 19 species native to the United States, *Ilex opaca* is most commonly used for Christmas decoration. It grows along the Atlantic seaboard and in the east-central states, west to northeastern Missouri. Excluding the western part of the United States where no species of the genus *Ilex* are native, many regions are bereft of holly, although its growth there is entirely possible.

POPULAR BEVERAGE, TOO

The value of holly is not limited to indoor and outdoor decoration. From time immemorial an infusion of the leaves of certain species of *Ilex* has resulted in a mixture that has been used both as a beverage and as an emetic or purifying medicine. Extremely popular with the American Indians, who often wove elaborate ceremonies about its preparation and consumption, the stimulating drink also was adopted enthusiastically in this country by European settlers. It has variously been called cassena, yapon, and the "black drink" and has been prepared from the leaves of one species or a combination of species, mainly *Ilex vomitoria* and *Ilex dahoon*. The tea-like beverage, which contains caffeine, is now used in this country only locally and in limited amounts, but in South America leaves from the species *Ilex Paraguariensis* are responsible for the popular beverage yerba maté, important in domestic and export trade in Argentina, Brazil, Paraguay, Chile, and Peru.

Holly, the world over, provides food for squirrels and birds, particularly the migrating robin, and the flowers of the holly are a great favorite of honeybees. Moreover, because of its light color and fine grain the wood of the holly tree or shrub makes excellent furniture, notably small articles. Although it achieves its fame around Christmas time, holly performs its useful and attractive functions all year around.

ADVENTURES IN ROCKIES ON AUDUBON PROGRAM

Some of America's most spectacular scenery and some of its most interesting animals are to be found high in the Rocky Mountains of Colorado. They will be brought on film to an audience at the Museum on Sunday afternoon, January 8, at 2:30 o'clock, in the third of the series of screen-tours offered by the Illinois Audubon Society.

W. Emerson Scott, eminent naturalist who made his color motion-pictures in seldom-traveled paths among the rugged peaks, will appear as lecturer with his film "Rocky Mountain Rambles." Especially notable are scenes showing the spectacular bighorn sheep and their lambs in their daring but sure-footed leaps over the rim-rocks. Other fascinating sequences are those of herds of lordly elk, many kinds of birds, flowers, and trees, and frightening chasms and roaring rivers.

The film and lecture will be presented in the James Simpson Theatre. Seats in the reserved section of the auditorium are free to Members of the Museum and of the Audubon Society upon presentation of their membership cards.

FIVE JUDGES APPOINTED FOR NATURE PHOTOS

Camera enthusiasts are urged to submit promptly their entries for the Eleventh Chicago International Exhibition of Nature Photography to be held at the Museum from February 1 to 28. The deadline for entries is January 16. The contest is held under the joint auspices of the Chicago Nature Camera Club and the Museum.

A panel of five judges has been appointed to select from among the thousands of entries the several hundred photographs to be shown. The judges are: William J. Beecher, Naturalist of the Cook County Forest Preserve District; Philip Hershkovitz, Associate Curator of Mammals at the Museum; John W. Mulder, Ranger-Naturalist of the National Park Service; and George W. Blaha and George M. Wood, well-known photographers.

Entries are to be in two divisions—prints and color slides. There are three classifications in each division: animal life, plant life, and general (scenery, clouds, geological formations, etc.). Silver medals and ribbons will be awarded in each classification of each division.

On Christmas and New Year's Day the Museum will be closed so that its employes may be with their families.

4-H Winners Visit Museum

As it has for many years past, the Museum welcomed some 1,400 farm boys and girls from all parts of the United States and Canada on November 29. They were in Chicago as winners of awards for excellence of achievement in their home communities, coming as delegates to the National Congress of 4-H Clubs held annually in conjunction with the International Livestock Exposition. They were assisted in making the most of their Museum visit by the entire staff of Raymond Foundation lecturers.

"PEBBLE PUPS" SNAP UP BOOK WITH SPECIMENS

The Museum Book Shop staff recently reported that they are victims of a relentless and heavily concentrated attack—by "pebble pups"—and, at last report, the mass invasion shows no indication of subsiding. For those not familiar with these formidable invaders, pebble pups are the junior equivalents of rockhounds, as adult rock-collectors call themselves.

The cause of all the furor in The Book Shop is a new book published by the Museum, *For Pebble Pups, A Collecting Guide for Junior Geologists* written by Dolla Cox Weaver, Raymond Foundation lecturer. Accompanying the book is a set of 18 representative rock and mineral specimens to be used as a handy reference with material in the book.

Written for the amateur collector from eight to twelve years of age, the 95-page book, which includes 27 photographs, provides numerous facts with which the average adult is unacquainted. Mrs. Weaver, a specialist in geology, introduces her pebble pups to the wondrous world of rock and mineral collecting, telling them of volcanoes, caverns, open-pit mines, cliffs, and mountains and describing various rocks and minerals and their sources. The author outlines the simple equipment needed by the young collector and suggests other readings should he want to go on with this rewarding hobby.

For Pebble Pups and its accompanying set of rocks and minerals can be purchased for $1.25 at The Book Shop of the Museum.

J. R.

Daily Guide Lectures

Free guide-lecture tours are offered daily except Sundays under the title "Highlights of the Exhibits." These tours are designed to give a general idea of the entire Museum and its scope of activities. They begin at 2 P.M. on Monday through Friday and at 2:30 P.M. on Saturday.

Special tours on subjects within the range of the Museum exhibits are available Mondays through Fridays for parties of ten or more persons. Requests for such service must be made at least one week in advance.

EXHIBIT SHOWS IRIDESCENCE IN HUMMINGBIRDS

By EMMET R. BLAKE
CURATOR OF BIRDS

IRIDESCENCE in hummingbirds is the theme of a new exhibit recently installed in Hall 20, the Museum's gallery of bird habitat groups. This exhibit was first opened to the public early last month as one of several displays featured on Members' Night (October 7). It is strikingly different from any other in the hall, and in certain respects unlike any other exhibit in the Museum.

YOU HAVE TO COME TO THE MUSEUM . . .

. . . no photograph, not even one in full natural colors, could begin to tell the story of this new exhibit of hummingbirds in which their startling iridescence is brought into view by an ingenious system of automatically alternating lights. Included in the exhibit are seven out of 350 described species that embrace a total of more than 650 varieties.

Soon after entering Hall 20 from the east (Stanley Field Hall) the eye is caught and held by one or several brilliant spots of color —ruby, emerald, purple, or golden bronze— that appear to be suspended in a velvety black void at the end of the Laysan albatross case. Even as one watches, additional spots of color appear, at intervals of 10 seconds, until a total of seven are visible. Soon all disappear for a few moments until the cycle starts once more. One's first impression is of assorted jewels of great brilliance displayed in a darkened case. Not until one approaches very closely is it apparent that the "jewels" are, in fact, the iridescent plumage of hummingbirds illuminated by small concealed spotlights.

The phenomenon of iridescence is not uncommon in the Animal Kingdom. Among birds it is especially conspicuous in hummingbirds. Although most members of this family are green above, males of many species have additional patches of iridescent feathers that seem to glow or sparkle, and to change in color with the incidence of light. The physical basis of iridescence may be of several types; in birds the phenomenon is caused by interference of the light waves reflected from the surfaces of the barbules with the light waves reflected from deeper portions of the barbules.

Unlike the traditional static museum display, the new exhibit is essentially dynamic in that it undergoes a cycle of changes activated by an electric timer circuit. Although the principle of mechanized dynamic natural-history exhibits is not new, it represents an important step in the evolution of museum educational techniques and is gaining in popularity. Iridescence in Hummingbirds is the latest of six such exhibits thus far installed in the Museum. The others include Fluorescent Minerals (corridor between Halls 36 and 37), three of the four new Physical Geology dioramas in the center of Hall 34, and X-raying a Mummy in the Hall of Egyptian Archaeology (Hall J).

Free interchange of ideas, as well as specimens, between natural history museums the world over is traditional, and always a matter of deep satisfaction. New techniques developed by one institution are quickly made available to all by means of publications and correspondence, and especially by periodical tours of inspection that enable museum personnel to exchange ideas. Our latest exhibit, for example, is modeled after a similar display seen by the Museum's President, Stanley Field, while on a visit to the British Museum.

It is gratifying that certain exhibition techniques, now considered standard, originated in our Museum. Of special note is the revolutionary cellulose-acetate process that was developed by Leon L. Walters for the treatment of reptiles and related animals. The more recent anthropology halls of the Museum introduce exhibition concepts that have stimulated great interest.

MUSEUM'S 'MECCA' PROJECT ON CHANNEL 11-TV

"Pilgrimage to Mecca" will be presented on WTTW (Channel 11), Chicago's new educational television station, on Wednesday, December 14, at 7 P.M. Dr. Rainer Zangerl, Curator of Fossil Reptiles, and Dr. Eugene S. Richardson, Jr., Curator of Fossil Invertebrates, will tell the story of the quarry that they transported to the Museum from Mecca, Indiana. For two years they and a corps of assistants have patiently split the black shale of the kidnapped quarry, charting all fossil debris and recovering thousands of specimens for the Museum's permanent collection.

The magnitude of their task in moving the Mecca Quarry to the Museum can be realized from the dimensions of the site: 15 feet long, 13 feet wide, and 14 inches thick. To excavate the shale bed from beneath a sloping hillside, it was necessary to remove many tons of overburden, making a quarry wall 12 feet high. The shale slabs were labeled in the field and the quarry was reassembled on the floor of a Museum laboratory.

The purpose of the Mecca Project is not principally the accumulation of new specimens. The careful recording of size, position, and character of the entire fossil content of the shale is designed to provide unusually accurate data for the reconstruction of the animal community and its changing environment during the advance of a Coal Age sea across a forested lowland. However, the fossils recovered for the Museum's collection have turned out to be exceptionally interesting in themselves. Some are entirely new to science; others are nearly complete specimens of sharks and shark-like fishes previously known only from isolated teeth or spines. A shrimp-like crustacean, formerly known from a single, imperfect specimen, has been collected by the hundreds from the quarry.

GIFTS TO THE MUSEUM

Following is a list of principal gifts received during the past month:

Department of Anthropology:

From: Byron Harvey III, Albuquerque, N.M.—black and white ladle (prehistoric Hopi), Oraibi, Arizona; Carl G. Kropff, Chicago—7 archaeological specimens, Point Barrow, Alaska

Department of Botany:

From: Mrs. F. H. McVey, Valparaiso, Ind. —Monotropa uniflora; W. J. Newhouse, Honolulu—lichen, Caroline Islands; Dr. E. S. Richardson, Jr., Gurnee, Ill.—fungus; Dr. Jacques Rousseau, Montreal—8 algae; Dr. M. R. Suxena, Hyderabad, Decian, India —alga; Agricultural Research Station, Lilongwe, Nyassaland—29 samples of seeds; Conservator of Forests, Sandakan, North Borneo—21 hand samples of North Borneo timbers; Department of Agriculture, Kitale, Kenya—45 samples of seeds; Director of Agricultural Research, Ibadan, Nigeria—11 samples of seeds; Institut National pour l'Etude Agronomique du Congo Belge, Yangambi, Belgian Congo—11 samples of seeds

Department of Geology:

From: Oriental Institute, Chicago—9 Upper Cretaceous fishes, 150 Cretaceous and Tertiary Invertebrates, Lebanon and Syria

Department of Zoology:

From: F. Plattner, Tabriz, Iran—35 fresh-water shells; W. Sugden, Cookham, Berks, England—610 seashells, Dukhan, Quatar Peninsula, Persian Gulf; August Ziemer, Evergreen Park, Ill.—85 seashells, Solomon Islands, 63 land shells, Wisconsin; Dr. Conrad Blomquist, Chicago—mole snake, Virginia; Miss Margaret Bradbury, Evanston, Ill.—415 lots of preserved fishes; Robert J. Drake, Tucson, Ariz.—4 snails, northern Mexico; Dr. Henry Field, Coconut Grove, Fla.—6 fresh-water shells, Pakistan; James E. Gillaspy, Twin Falls, Idaho—8 wasps; Werner H. Gottsch, Houston, Texas—an alligator; John Hemingway, Homewood, Ill.—an alligator, Louisiana; Harry Hoogstraal, Cairo, Egypt —10 birds, Turkey; Dr. Clark Hubbs, Austin, Texas—78 fishes, Texas, Mexico and Costa Rica; N. L. H. Krauss, Honolulu—8 tree frogs, Mexico; Lt. Comdr. Don C. Lowrie, San Francisco—a snake, Okinawa Island; Dr. Sherman Minton, Indianapolis—a snake, Texas; Museo de Historia Natural, Montevideo, Uruguay—5 fresh-water clams; Dr. Charles A. Reed, Chicago—346 amphibians and reptiles, Syria, Iraq, Lebanon; William A. Thomas, Chicago—10 bird-skins, Arctic America; Lt. Col. F. Burns, Fort Sam Houston, Texas—5 bats, Texas and Louisiana

Library:

Books from Dr. Theodor Just, Oak Park, Ill.

CHRISTMAS SHOPPING MADE AN EASY TASK! . . . THE MUSEUM WILL DO IT FOR YOU

Christmas shopping is made an easy task by two special services offered by Chicago Natural History Museum. You need not stir out of your home—and you don't have to wrap any packages. Here's how you can buy and send your gifts in complete comfort, away from all crowds and confusion:

(1) Christmas Gift Memberships

Send to the Director the name and address of the person to whom you wish to give a Museum membership, together with your remittance to cover membership fee (see enclosed Christmas gift membership order form).

An attractive Christmas card will notify the recipient that through your generosity he has been elected a Member of the Museum. He will receive also his membership card and information on membership privileges.

(2) Museum Book Shop Gifts

Books endorsed for scientific authenticity by members of the Museum staff are on sale in the BOOK SHOP. The selection is for both adults and children.

When desired, the BOOK SHOP will handle orders by mail and telephone (WAbash 2-9410). It will undertake all details of wrapping and dispatching gift purchases to the designated recipients, together with such personal greetings as the purchaser may specify, charging only postal costs.

NEW MEMBERS

(October 17 to November 15)

Associate Members

Thomas G. Cassady, Gerard J. Eger, Mrs. Marshall L. Hayward, Jr., Earle Ludgin, C. Bouton McDougal, James J. O'Sullivan, Mrs. A. S. Roebuck, Julian J. (Pat) Romane, Mrs. Nell Y. Searle, Vincent D. Sill, James B. Vogel

Sustaining Members

Clayton Ashe, Stewart B. Matthews

Annual Members

Mrs. Anne Adams, Gordon Aitken, Alfred Akerhaugen, William A. Anderson, Mitchell N. Barnett, Stephen D. Barnett, Albert S. Barney, B. B. Button, Jr., Colin L. Campbell, Ernest E. Clarke, Dr. T. Howard Clarke, John L. Clarkson, John Carey Culbertson, S. A. Culbertson III, Raymond M. Dunkle, Jr., Dr. Eugene A. Edwards, G. H. Edwards, Bernard M. Fisher, Bernard Fleischman, George A. Fort, Arthur E. Fox, Forrest L. Fraser, Miss Maude Gordon, Arthur S. Gomberg, Miss Catherine Hartigan, Jerome J. Hochberg, Dr. Robert H. Hollis, Philip L. Howard, Castle W. Jordan, Richard B. Kappler, Edward C. Lensing, Jr., Maury Lieber, Ira G. Marks, Harvey R. Mason, E. F. McGuire, Dr. Francisco Mendizabal, Allen C. Michaels, Bernard Miller, Norman Miller, Charles A. Nixon, Charles J. Nowlan, Dr. Andrew J. Oberlander, Philip Pinsof, Mrs. Mary H. Russell, Mrs. Stanley Savage, Edwin C. Schlake, Thomas G. Sexton, Miss Bessie C. Stenhouse, Mrs. Borden Stevenson, Mrs. Roy E. Sturtevant, E. V. Sundt, Dr. W. V. Thompson, Dr. David D. Turow, Mrs. Ruth Ushijima, A. L. Van Ness, John A. Wagner, Mrs. Russell Wiles, Miss Carolyn R. Wray, Robert L. Wreath, T. L. Yates, Charles B. Zeller

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